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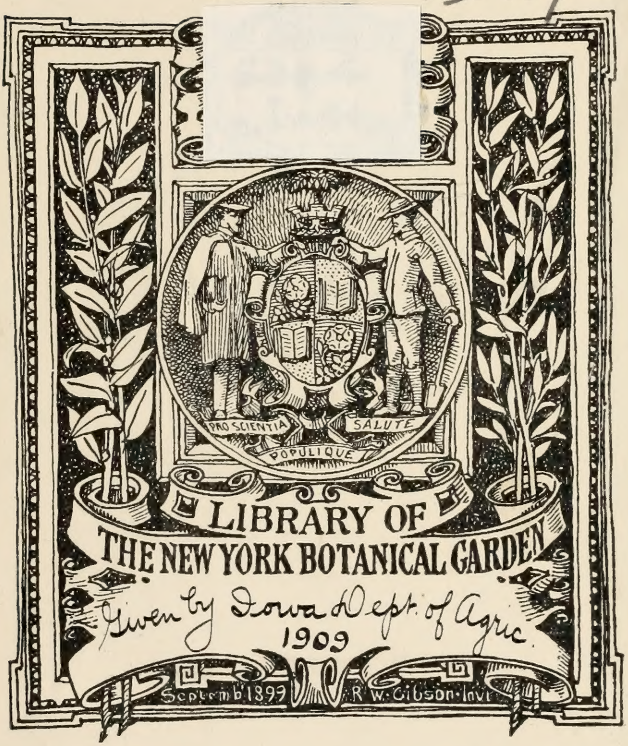

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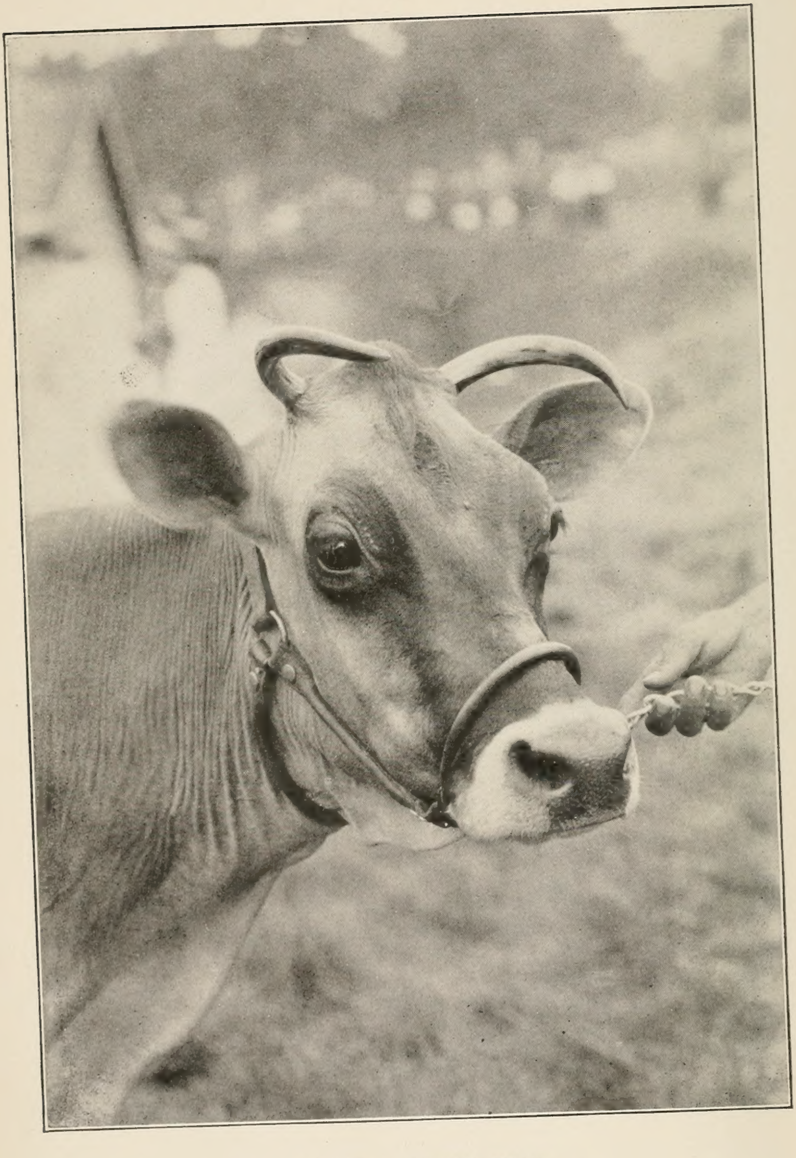

AN IDEAL JERSEY HEAD
Prize Winner Iowa State Fair and Exposition 1907

EIGHTH ANNUAL

Iowa Year Book of Agriculture

Issued by the

Iowa Department of Agriculture

1907

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LETTER OF TRANSMITTAL

OFFICE OF
IOWA STATE DEPARTMENT OF AGRICULTURE,

DES MOINES, IOWA, February 10, 1908.

To His Excellency, ALBERT B. CUMMINS, Governor of Iowa:

SIR:—I have the honor to transmit herewith the Eighth Annual IOWA YEAR BOOK OF AGRICULTURE, for the year 1907.

Respectfully submitted,

JOHN C. SIMPSON,
SECRETARY STATE BOARD OF AGRICULTURE.

APR 13 1909

INTRODUCTORY.

The Eighth Annual Iowa Year Book of Agriculture for 1907 includes statistics, reports and papers that will be of interest to the student of Iowa agriculture. It is subdivided into thirteen parts. Preceding Part I is a condensed statistical table which tells the story of Iowa's source of wealth. These tables were prepared with great care in the office of the Iowa Department of Agriculture and convey, we believe, as near as it is possible, the agricultural resources of Iowa.

Part I contains the final summary of the Iowa Weather and Crop Service for the year 1907. A monthly review of the climatology for the year is given, followed by the annual precipitation chart, date of the last killing frost in the spring and the first in the fall, and a final report showing the total yield of soil products by counties and value at farm prices December 1, 1907. Part II contains statistical tables of Iowa's principal farm crops for a period of years, principal farm crops of the United States, and principal farm crops of the world for 1906. Parts III and IV give the proceedings of the State Farmers' Institute and Agricultural Convention held in December, 1907. Part V contains a synopsis of the meetings of the State Board of Agriculture, 1907. Part VI gives a synopsis of the meeting of the Iowa Swine Breeders' Association, held at Des Moines in June, 1907. Part VII is a partial report of the Iowa State Dairy Association, held at Des Moines in November, 1907. Part VIII deals with the Dairy Industry in Iowa. Part IX, a report of the Iowa State Fair and Exposition of 1907, giving a list of awards in the live stock departments, etc. Part X contains papers, addresses and miscellaneous articles pertaining to agriculture in all its branches. Part XI gives a financial statement of the County and District Fair Associations in Iowa receiving State aid in 1907. Part XII, the State law with reference to the standing of stallions for public service; a list of all stallions for which State certificate has been issued is given by counties, showing the owner's name and the breed of stallion. Part XIII contains a directory of associations and organizations representing agricultural interests in Iowa and other states.

If the work of the Department is to be carried on in a manner to be of the greatest benefit to the State, it will be necessary for future General Assemblies to enact legislation giving to the State Board of Agriculture additional authority and support fund. Today the great agricultural State of Iowa provides only the meager sum of twenty-four hundred dollars annually for the support of the Department of Agriculture. This, with possibly a few exceptions, is the smallest fund expended annually for the support of an agricultural department by any state in the Union. This support fund should be increased to not less than five thousand dollars annually. With even this small increase the department could broaden its scope to a great extent by gathering statistical information, which is impossible under present conditions. Authority should be granted the Department to issue bulletins at such times as may deemed necessary by the State Board, possibly limiting the publications to one each quarter. As it is now the only medium the Department has for placing valuable papers, statistics, etc., before the public is through the annual Iowa Year Book of Agriculture. The size of this publication necessitates the omission of many matters of interest to the general public. To better illustrate this, would say that a bulletin should be published at the close of the institute year containing a financial report, statistics as to attendance, papers and addresses of each institute held for the preceding year. As it is now, only a short synopsis of this work can be included in the annual Year Book. A special bulletin on the swine industry could be issued immediately following the meeting of the Iowa Swine Breeders' Association, which would also include the proceedings of their meeting. Another bulletin on dairying could follow the yearly meeting of the Iowa State Dairy Association. Still another bulletin should be issued containing information and a list, by counties, of all stallions for which a State certificate has been issued. Such a bulletin placed in the hands of each owner of a pure bred stallion would be of great assistance in enforcing the provisions of the stallion law.

The State institute law should be so amended that all reports should be made to the office of the Department of Agriculture. The stallion law should be amended requiring the owner or keeper to report the death, or removal from the State of any stallion for which State certificate has been issued, and an annual renewal should be required upon all State certificates. This will keep the list of stallions alive and up to date and remove to a great extent the liability of fraud by unscrupulous parties substituting another animal for the State certificate he holds.

Great care has been taken in preparing the copy for this book and an earnest effort made to have it issued promptly. The number of copies issued is three thousand.

J. C. SIMPSON,
Secretary Iowa State Board of Agriculture.

DES MOINES, IOWA, February 10, 1908.

STATE BOARD OF AGRICULTURE

1908

EX OFFICIO MEMBERS.

GOVERNOR OF STATE	*Des Moines*
PRESIDENT IOWA STATE COLLEGE	*Ames*
STATE DAIRY COMMISSIONER	*Des Moines*
STATE VETERINARIAN	*Forest City*

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President, Vice-President, Secretary and Treasurer are Elected for one Year.

Terms of Directors for Even-Numbered Districts Expire Second Wednesday in December, 1908. Terms of Directors for Odd-Numbered Districts Expire Second Wednesday in December, 1909

COMMITTEES.

YEAR OF 1908.

EXECUTIVE COMMITTEE:

C. E. CAMERON..W. C. BROWN
J. C. SIMPSON

AUDITING COMMITTEE:

C. W. PHILLIPS..T. C. LEGOE
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COMMITTEE ON RESOLUTIONS:

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JOHN LEDGERWOOD

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CONTAGIOUS DISEASES AMONG DOMESTIC ANIMALS:

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H. L. PIKE

IOWA WEATHER AND CROP SERVICE:

GEO. M. CHAPPEL, DIRECTOR..DES MOINES

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ERRATUM.

The table on pages 55 and 56, showing substantially the corn crop of the world, is for the years 1901-2-3-4 and 5, as indicated on page 55.

The table on pages 61 and 62, showing substantially the rye crop of the world, is for the years 1902-3-4-5 and 6, as indicated on page 61.

IOWA'S SOURCE OF WEALTH.

COMPILED ESPECIALLY FOR THE IOWA YEAR BOOK

AVERAGE YIELD, AVERAGE YIELD PER ACRE, AVERAGE FARM PRICE DECMEBER 1, AVERAGE VALUE PER ACRE AND TOTAL VALUE OF IOWA FARM PRODUCTS FOR THE YEAR 1907.

Farm Products	Acreage	Yield	Average yield per acre	Average farm price Dec. 1, 1907	Value per acre	Total Value
Winter Wheat	85.762	1,698,101	19.8	$ .83	$16.44	$ 1,409,423
Spring Wheat	338,640	4,402,320	13.	.81	10.53	3,565,879
Corn	8,341,164	246,898,460	29.6	.44	13.03	108,635,322
Oats	4,533,853	111,190,400	24.5	.39	9.56	43,364,256
Barley	402,168	9,893,330	24.6	.60	14.76	5,935,998
Rye	52,944	900,060	17.	.61	10.37	549,036
Flax	42,744	461,960	10.8	.98	10.59	408,640
Potatoes	117,231	9,847,430	84.	.62	52.08	6,105.406
Hay, Tame	3,372,470	5,117,878	1.5	8.50	12.75	43,401,963
Hay, Wild	896,260	1,172,590	1.3	6.75	8.77	7,914,892
Pasturage	10,000,000	----------	------	------	9.00	90,000,000
Fruit and Garden Products	625,490	----------	------	------	20.00	12,509,800
Other crops not enumerated	500,000	----------	------	------	10.00	5,000,000
Acreage crop not harvested	1,300,000	----------	------	------	------	----------
Acreage occupied by farm buildings and lots	1,519,343	----------	------	------	------	----------
Dairy Products	----------	----------	------	------	------	40,000,000
Poultry	----------	----------	------	------	------	20,000,000
Wool	----------	----------	------	------	------	700,000
Total	32,228,109					$389,500,705

NUMBER, AVERAGE VALUE, .AND TOTAL VALUE OF IOWA LIVE STOCK JANUARY 1, 1908. SUPPLEMENTED BY A TABLE SHOWING THE TOTAL NUMBER AND AVERAGE VALUE OF STOCK ELIGIBLE FOR REGISTRY AS SHOWN BY THE STATE CENSUS FOR THE YEAR 1905.

Stock	Number all Ages	Average Value	Total Value	Number of Pure Bred Live Stock Census 1905	Average Value
Horses	1,464,141	$ 90.00	$131,772,690	8,167	$305.51
Mules	43,655	100.00	4,365,500		
Milch Cows	1,429,017	33.00	47,157,561	89,388	53.15
Other Cattle	3,548,493	25.00	78,712,325		
Swine	8,366,520	9.00	75,298,680	110,035	12.89
Sheep	703,902	5.00	3,519,510	9,988	8.64
Total	15,555,728		$340,826,266		

SUMMARY OF TOTAL ACREAGE FARM LANDS WITHIN THE STATE, NUMBER OF FARMS, AVERAGE SIZE OF FARMS, AVERAGE VALUE PER ACRE, TOTAL VALUE FARM MACHINERY, AVERAGE VALUE FARM MACHINERY PER FARM, TOTAL VALUE FARM BUILDINGS, AVERAGE VALUE FARM BUILDINGS PER FARM, TOTAL VALUE FARM LANDS AND BUILDINGS, TOTAL RURAL POPULATION (1905 CENSUS), AVERAGE RURAL POPULATION PER FARM.

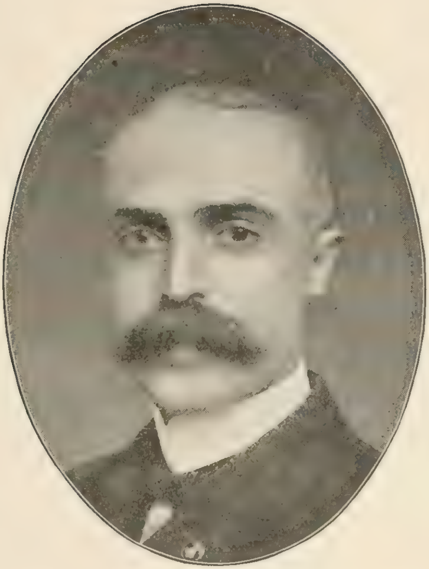
Total acreage farms	32,228,109
Number of farms	209,163
Average size of farms (acres)	158½
Average value per acre	$ 58.00
Total value farm machinery	41,232,368.00
Average value farm machinery per farm	197.00
Total value farm buildings	303,750,975.00
Average value farm buildings per farm	1,452.00
Total value farm lands and buildings	$1,855,857,423.00
Total rural population (1905 census)	1,142,114
Average number per farm	5½

GRAND TOTALS.

Value crops and other farm products 1907	$ 389,500,705.00
Value live stock	340,826,266.00
Value farms lands and buildings	1,855,857,423.00
Value farm machinery	41,232,368.00
GRAND TOTAL VALUATION	$2,627,416,762.00

PER CAPITA VALUATION.

Per capa valuation rural population	$ 2,300.00
Average valuation per farm	12,561.00
Per capa valuation farm crops 1907	341.00
Average valuation farm crop per acre 1907	11.75
Average valuation farm crop per farm 1907	1,862.00
Per capa valuation live stock	298.00
Average valuation live stock per farm	1,629.00
Average valuation live stock per acre	10.27
Total per capa valuation farm crops and live stock	639.00
Average valuation farm crop and live stock	3,491.00



GEO. M. CHAPPEL,
Director Iowa Weather and Crop Service.
Successor to J. R. Sage.

PART I.

Report of the Iowa Weather and Crop Service for 1907.

Geo. M. Chappel, Director

CLIMATOLOGY OF THE YEAR 1907.

Barometer.—The mean pressure of the atmosphere of the year of 1907 was 30.04 inches. The highest observed pressure was 30.79 inches on January 22d at Charles City, Floyd county. The lowest pressure was 29.18 inches on November 20th at Dubuque, Dubuque county. The range for the state was 1.61 inches.

Temperature.—The mean temperature for the state was 47.6°, which is the normal, for the state. The highest temperature reported was 102°, on July 5th, at Thurman, Fremont county. The lowest temperature reported was 31° below zero on February 5th, at Washta, Cherokee county. The range for the year was 133°.

Precipitation.—The average amount of rain and melted snow for the year, as shown by complete records of 103 stations was 32.06 inches, which is .03 of an inch above the normal, and .83 of an inch above the average amount in 1906. The greatest amount recorded at any station for the year was 43.90 inches at Mount Ayr, Ringgold county. The least amount recorded was 19.93 inches at Sioux City, Woodbury county. The greatest monthly rainfall was 13.66 inches at Belle Plaine, Benton county, in July. The least monthly precipitation was .05 of an inch at Sioux City, Woodbury county, in November, and Hancock, Pottawattamie county, in December. The greatest amount in any twenty-four consecutive hours was 5.30 inches at Belle Plaine, in Benton county, on July 9th. The average number of days on which .01 of an inch or more of fain fell was eighty-eight.

Wind and Weather.—The prevailing direction of the wind was northwest. The highest velocity was 66 miles per hour in Sioux City, Woodbury county, from the northwest on January 19th. The average daily movement of wind was 202 miles. There were 168 clear days; 94 partly cloudy, and 103 cloudy days; as against 163 clear days, 97 were partly cloudy, and 105 cloudy days in 1906.

MONTHLY SUMMARIES.

JANUARY.—The monthly mean temperature for the state, as shown by the records of 115 stations, was 18.8°, which is 1.0° below the normal for January. By sections the mean temperatures were as follows: Northern section, 14.0°, which is 3.6° below the normal; Central section, 19.4°, which is .02° above the normal; Southern section, 23.1°, which is 0.6° above the normal. The highest monthly mean temperature was 28.9°, at Keokuk, and the lowest monthly mean was 8.0°, at Rock Rapids. The highest temperature reported was 68°, at Keokuk, on the 7th, and lowest was 22° below zero, at Forest City and Inwood, on the 30th. The average monthly maximum was 45.4°, and the average monthly minimum was --11.5°. The greatest daily range was 46° at Onawa; and the average of greatest daily ranges was 33.2°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 123 stations, was 1.52 inches, which is .57 of an inch above the normal. The average by sections was as follows: Northern section, .96 of an inch, which is .20 of an inch above the normal; Central section, 1.41 inches, which is .37 of an inch above the normal; Southern section, 2.20 inches, which is 1.15 inches above the normal. The largest amount reported was 5.30 inches at Burlington, and the least amount reported was .10 of an inch at Atlantic. The greatest daily rainfall reported was 2.69 inches at Keokuk, on the 18th-19th. The average number of days on which .01 of an inch or more was reported was 7.

WIND AND WEATHER.—The prevailing direction of the wind was northwest. The highest velocity reported was 66 miles per hour, from the northwest, at Sioux City, on the 19th. The average number of clear days was 8; partly cloudy 7, and cloudy 16.

FEBRUARY.—The monthly mean temperature for the state, as shown by records of 116 stations, was 25°, which is 5.8° above the normal. By section the mean temperatures were as follows: Northern section, 22.1°, which is 5.8° above the normal; Central section, 25.1°, which is 5.7° above the normal; Southern section, 27.7°, which is 5.9° above the normal. The highest monthly mean was 30.2°, at Keokuk, and the lowest monthly mean was 19.5°, at Sibley. The highest temperature reported was 65°, at St. Charles, on the 16th, and the lowest reported was --31°, at Washta, on the 5th. The average monthly maximum was 55.5°, and the average monthly minimum was --17.9°. The greatest daily range was 51°, at Sibley, and the average of greatest daily ranges was 37.5°.

PRECIPITATION.—The average precipitation for the state, as shown by records of 126 stations, was .71 of an inch, which is .32 of an inch below the normal. The averages by sections were as follows: Northern section, .80 of an inch, which is .13 of an inch below the normal. Central section, .72 of an inch, which is .29 of an inch below the normal; Southern section, .61 of an inch, which is .53 of an inch below the normal. The largest amount reported was 1.95 inches, at Rockwell City and Thurman, and the least amount reported was .06 of an inch, at Stockport. The greatest daily precipitation reported was 1.26 inches, at Britt, on the 28th. There was an average of 4 days on which .01 of an inch or more was reported.

Wind and Weather.—The prevailing direction of the wind was northwest. The highest velocity reported was 52 miles an hour, from the northwest, at Sioux City on the 1st. The average number of clear days was 14, partly cloudy 6, and cloudy 8.

March.—The monthly mean temperature for the state, as shown by the records of 116 stations, was 40.6°, which is 7.6° above the normal. By sections the mean temperatures were as follows: Northern section, 36.7°, which is 6.9° above the normal; Central section, 41.1°, which is 8.2° above the normal; Southern section, 44.1°, which is 8.0° above the normal. The highest monthly mean was 47.6° at Keokuk. The lowest monthly mean was 31.8° at Sibley. The highest temperature reported was 92°, at Clarinda and Massena, on the 25th. The lowest temperature reported was 7° below zero, at Inwood, Lyon county, on the 2d. The average monthly maximum was 84.0°; and the average monthly minimum was 10.2°. The greatest daily range was 59°, at St. Charles, and the average of greatest daily ranges was 44.6°.

Precipitation.—The average precipitation for the state, as shown by records of 124 stations, was 1.35 inches, which is 0.55 of an inch below the normal. The averages by sections were as follows: Northern section, 1.19 inches, which is 0.44 of an inch below the normal; Central section, 1.20 inches, which is 0.79 of an inch below the normal; Southern section, 1.66 inches, which is 0.43 of an inch below the normal. The largest amount reported was 5.05 inches at Keokuk. The least amount reported was 0.23 of an inch at Washta. The greatest daily rainfall was 3.50 inches, at Keokuk, on the 28th-29th. The average number of days reported on which .01 or more of precipitation fell was 6.

Wind and Weather.—The prevailing direction of the wind was northwest. The highest velocity reported was 40 miles per hour, from the south, at Sioux City, on the 24th, and from the southwest, at Des Moines, on the 26th. The average number of clear days was 14, partly cloudy 7, and cloudy 10.

April.—The monthly mean temperature for the state, as shown by records of 119 stations, was 41.05°, which is 7.7° below the normal. By sections the mean temperatures were as follows: Northern section, 39.2°, which is 8.7° below the normal; Central section, 41.9°, which is 6.8° below the normal; Southern section, 43.4°, which is 7.7° below the normal. The highest monthly mean was 46.3°, at Keokuk. The lowest monthly mean was 35.9°, at Sibley. The highest temperature reported was 80°, at Clarinda on the 24th. The lowest temperature reported was 10°, at Earlham on the 14th, and at Washta on the 17th. The average monthly maximum was 71.6°, and the average monthly minimum was 16.4°. The greatest daily range was 54°, at Woodburn; and the average greatest daily ranges was 38.2°.

Precipitation.—The average precipitation for the state, as shown by records of 125 stations, was 1.32 inches, which 1.59 inches below the normal. By sections the averages were as follows: Northern section, .84 of an inch, which is 1.81 inches below the normal; Central section, 1.27 inches, which is 1.66 inches below the normal; Southern section, 1.84 inches, which is 1.30 inches below the normal. The largest amount reported was 3.22 inches at Burlington. The least amount reported was .24 of an inch at Inwood. The greatest daily rainfall reported was 1.50 inches, at Pacific Junction on the 28th. The average number of days on which .01 of an inch or more was reported was 6.

Wind and Weather.—The prevailing direction of the wind was northwest. The highest velocity reported was 52 miles per hour, from the northwest, at Sioux City, on the 11th. The average number of clear days was 12, partly cloudy 8, and cloudy 10.

May.—The monthly mean temperature for the state, as shown by records of 120 stations, was 53.5°, which is 7.2° below the normal. By sections the mean temperatures were as follows: Northern section, 51.4°, which is 7.9° below the normal; Central section, 53.6°, which is 7.1° below the normal; Southern section, 55.5°, which is 6.7° below the normal. The highest monthly mean was 57.6°, at Keokuk, and the lowest monthly mean was 48.0°, at Sibley. The highest temperature reported was 96° at Elliot, on the 22d, and the lowest was 14° at Whitten, on the 4th. The average monthly maximum was 86.4°, and the average monthly minimum was 22.1°. The greatest daily range was 66°, and the average of greatest daily ranges was 46.3°.

Precipitation.—The average precipitation for the state, as shown by records of 126 stations, was 3.48 inches, which is .78 of an inch below the normal. The averages by sections were as follows: Northern section, 2.74 inches, which is 1.30 of an inch below the normal; Central section, 3.87 inches, which is .38 of an inch below the normal; Southern section, 3.84 inches, which is .64 of an inch below the normal. The largest amount reported was 7.68 inches, at Tipton, and the least amount reported was .71 of an inch at Clear Lake. The greatest daily rainfall reported was 4.50 inches at Tipton, on the 23d. The average number of days on which .01 of an inch or more of rainfall was reported was 10.

Wind and Weather.—The prevailing direction of the wind was north, southeast, south and southwest. The highest velocity reported was 52 miles per hour from the south, at Sioux City, on the 12th. The average number of clear days was 11, partly cloudy 10, and cloudy days 10.

June.—The monthly mean temperature for the state, as shown by records of 120 stations, was 66.5°, which is 2.9° below the normal. By section the mean temperatures were as follows: Northern section 65.2°, which is 3.0° below the normal; Central section, 66.7°, which is 2.8° below the normal; Southern section, 67.7°, which is 2.8° below the normal. The highest monthly mean was 70.0° at Thurman, and the lowest monthly mean was 63.2° at Estherville. The highest temperature reported was 98°, at Clarinda, on the 16th; and the lowest reported was 36° at Atlantic on the 2d. The average monthly maximum was 92.6°, and the average monthly minimum was 42.4° The greatest daily range was 44° at Audubon and Atlantic. The average of greatest daily ranges was 34.2°.

Precipitation.—The average precipitation for the state, as shown by records of 129 stations, was 5.35 inches, which is 0.79 of an inch above the normal. The averages by sections were as follows: Northern section, 5.67 inches, which is 1.03 inches above normal; Central section, 4.98 inches, which is 0.45 of an inch, above the normal; Southern section, 5.41 inches, which is 0.90 of an inch above the normal. The largest amount reported was 9.33 inches at Northwood, and the least amount reported was 2.07 inches at Davenport. The greatest daily rainfall reported was 3.60 inches, at Clear Lake and Waukee, on the 9th. The average number of days on which .01 of an inch or more was reported was 11.

WIND AND WEATHER.—The prevailing direction of the wind was southwest. The highest velocity reported was 44 miles per hour, from the west, at Sioux City, on the 23d. The average number of clear days was 14, partly cloudy 9, and cloudy 7.

JULY.—The monthly mean temperature for the state, as shown by records of 117 stations, was 73.7°, which is 0.4° below the normal. By sections the mean temperatures were as follows: Northern section, 71.9°, which is 1.1° below the normal; Central section, 74.1°, which is 0.1° below the normal. Southern section, 75.1°, which is 0.1° below the normal. The highest monthly mean was 76.9°, at Ottumwa, and the lowest monthly mean was 69.1° at Fayette. The highest temperature reported was 102°, at Thurman, on the 5th, and the lowest temperature reported was 41°, at Alton, on the 2d. The average monthly maximum was 93.9°, and the average monthly minimum was 53.6. The greatest daily range was 42°, at Estherville. The average of greatest daily ranges was 30.4°.

PRECIPITATION.—The average precipitation for the state, as shown by the records of 126 stations, was 7.27 inches, which is 2.92 inches above the normal. The averages by sections were as follows: Northern section, 7.02 inches, which is 2.79 inches above the normal; Central section, 7.23 inches, which is 2.93 inches above the normal; Southern section, 7.56 inches, which is 3.02 inches above the normal. The largest amount reported was 13.66 inches at Belle Plaine; the least amount reported was 3.97 inches at Elkader. The greatest daily rainfall reported was 5.30 inches, at Belle Plaine, on the 9th. The average number of days on which .01 of an inch or more was reported was 13.

WIND AND WEATHER.—The prevailing direction of the wind was southwest; the highest velocity reported was 48 miles per hour.

AUGUST.—The monthly mean temperature for the state, as shown by records of 113 stations, was 71.1°, which is 0.8° below the normal. By sections the mean temperatures were as follows: Northern section, 69.5°, which is 0.9° below the normal; Central section, 71.0°, which is 0.8° below the normal; Southern section, 72.7°, which is 0.8° above the normal. The highest monthly mean was 75.3° at Ottumwa. The lowest monthly mean was 67.6 at Sibley. The highest temperature reported was 99°, at Ottumwa, on the 31st. The lowest temperature reported was 37° at Osage on the 13th. The average monthly maximum was 92.9°; the average monthly minimum was 46.9°. The greatest daily range was 49° at Osage. The average of greatest daily ranges was 32.2°.

PRECIPITATION.—The average precipitation for the state, as shown by records of 123 stations, was 4.33 inches, which is 0.57 of an inch above the normal. The average by sections was as follows: Northern section, 3.99 inches, which is 0.86 of an inch above the normal; Central section, 4.69 inches, which is 0.82 of an inch above the normal; Southern section, 4.30 inches, which is 0.54 of an inch above the normal. The largest amount reported was 9.67 inches at Delaware. The least amount reported was 1.05 inches, at Rock Rapids. The greatest daily rainfall was 4.95 inches at Boone, on the 28th-29th. The average number of days on which .01 of an inch or more was reported was 9.

SEPTEMBER.—The monthly mean temperature for the state, as shown by the records of 110 stations, was 62.8°, which is 0.7° below the normal. By sections the mean temperatures were as follows: Northern section, 60.8°, which is 1.2° below the normal; Central section, 62.9°, which is 0.5° below the normal; Southern section, 64.7°, which is 0.5° below the normal. The highest monthly mean was 66.6°, at Keokuk and Leon. The lowest monthly mean was 58.0° at Sibley. The highest temperature reported was 98° at Clarinda and Thurman on the 1st. The lowest temperature reported was 25° at Elma, on the 25th. The average monthly maximum was 89.5°, and the average monthly minimum was 31.8°. The greatest daily range was 51° at Storm Lake and Washta, and the average of greatest daily ranges was 36.3°.

PRECIPITATION.—The average precipitation for the state, as shown by records of 118 stations, was 2.76 inches, which is 0.60 of an inch below the normal. The averages by sections were as follows: Northern section, 2.71 inches, which is 0.66 of an inch below the normal; Central section, 3.02 inches, which is 0.21 of an inch below the normal; Southern section, 2.54 inches, which is 0.95 of an inch below the normal. The largest amount reported was 6.06 inches at Ridgeway. The least amount reported was 1.38 inches at Washington. The greatest daily rainfall reported was 3.15 inches at Olin on the 27th and 28th. There was an average of 8 days on which .01 of an inch or more rainfall was reported.

WIND AND WEATHER.—The prevailing direction of the wind was northwest. The highest velocity reported was 42 miles per hour, from the northwest, at Sioux City, on the 23d. The average number of clear days was 15; partly cloudy, 9; cloudy, 6.

OCTOBER.—The monthly mean temperature for the state, as shown by records of 115 stations, was 50.4°, which is 2.1° below the normal. By sections the mean temperatures were as follows: Northern section, 48.4°, which is 2.5° below the normal; Central section, 50.4°, which is 1.6° below the normal; Southern section, 52.4°, which is 2.1° below the normal. The highest monthly mean was 54.1°, at Onawa, and the lowest monthly mean was 46.2°, at Plover. The highest temperature reported, 85° at Hampton on the 2d, and at Keosauqua and Messena on the 17th. The lowest temperature reported was 10°, at Audubon and Massena, on the 28th. The average monthly maximum was 79.4°, and the average monthly minimum was 18.7°. The greatest daily range was 50°, at Clarinda and Guthrie Center, and the average of greatest daily ranges was 39°.

PRECIPITATION.—The average precipitation for the state, as shown by records of 124 stations, was 1.50 inches, which is 0.89 of an inch below the normal. By sections the averages were as follows: Northern section, 1.24 inches, which is 1.01 inches below the normal; Central section, 1.73 inches, which is 0.70 of an inch below the normal; Southern section, 1.53 inches, which is 0.97 of an inch below the normal. The largest amount reported was 3.71 inches, at Boone; the least amount reported was 0.30 of an inch, at Tipton. The greatest daily rainfall was 2.24 inches, at Perry, on the 3d. The average number of days on which .01 of an inch or more was reported was 5.

Wind and Weather.—The prevailing direction of the wind was northwest. The highest velocity reported was 40 miles per hour from the north at Sioux City on the 7th. The average number of clear days was 20; partly cloudy days, 5, and cloudy, 6.

November.—The monthly mean temperature for the state, as shown by the records of 115 stations, was 36.7°, which is 1.3° above the normal. By sections the mean temperatures were as follows: Northern section, 34.7°, which is 2.0° above the normal; Central section, 36.8°, which is 1.6° above the normal; Southern section, 38.7°, which is 0.5° above the normal. The highest monthly mean was 43.6°, at Bedford. The lowest monthly mean was 32.3°, at Elma. The highest temperature reported was 68°, at Baxter, on the 6th. The lowest temperature reported was 4° below zero at Elma, on the 14th. The average monthly maximum was 59.3°, and the average monthly minimum was 11.3°. The greatest daily range was 43° at Baxter; and the average of greatest daily ranges was 32.2°.

Precipitation.—The average precipitation for the state, as shown by records of 123 stations was 1.03 inches, which is 0.29 of an inch below the normal. The averages by sections were as follows: Northern section, 0.91 of an inch, which is 0.37 of an inch below the normal; Central section, 1.04 inches, which is 0.31 of an inch below the normal; Southern section, 1.15 inches, which is 0.19 of an inch below the normal. The largest amount reported was 2.27 inches at Logan, and the least amount reported was .05 of an inch at Sioux City. The greatest daily rainfall was 1.70 inches at Logan, on the 1st. The average number of days on which .01 of an inch or more precipitation was reported was 4.

Wind and Weather.—The prevailing direction of the wind was northwest. The highest velocity reported was 44 miles per hour, from the northwest at Sioux City on the 30th. The average number of clear days was 17; partly cloudy, 6; cloudy, 7.

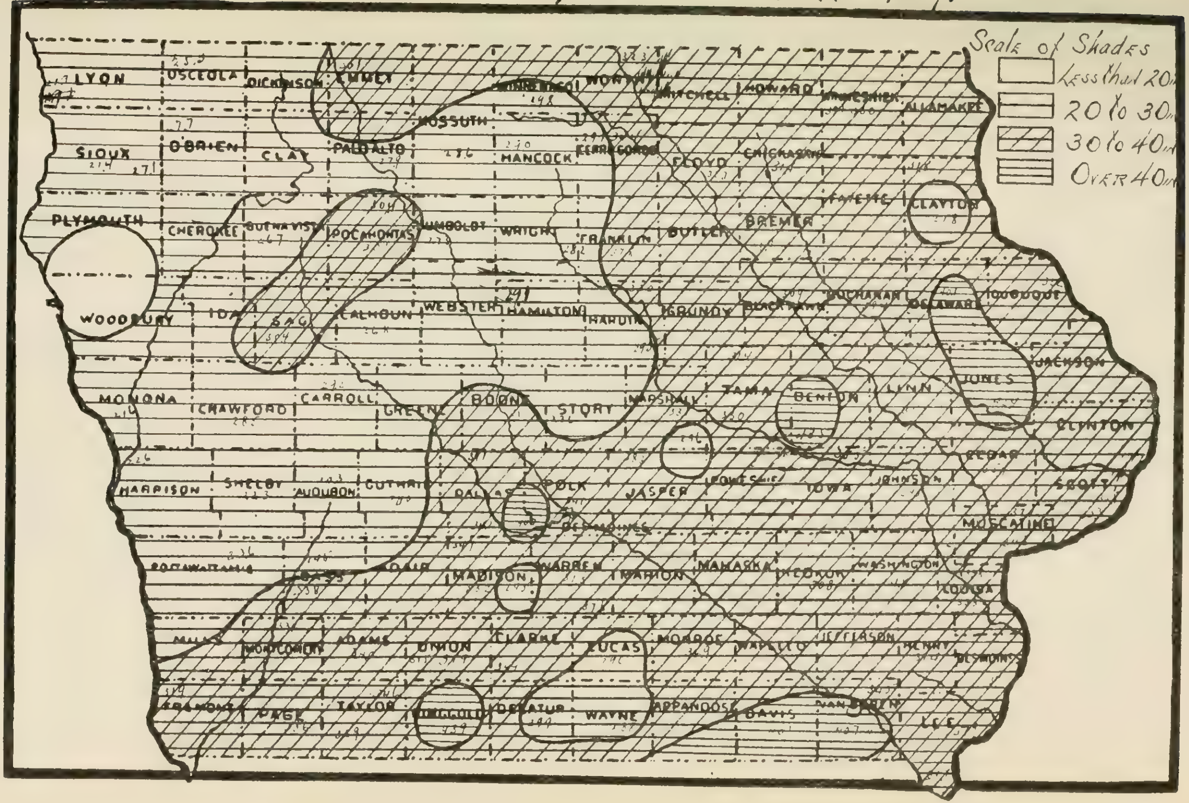
December.—The monthly mean temperature for the state, as shown by the records of 117 stations, was 28.8°, which is 5.9° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 26.2°, which is 6.2° above the normal; Central section, 29.2°, which is 6.1° above the normal; Southern section, 31.1°, which is 8.2° above the normal. The highest monthly mean was 34.9°, at Keokuk, and the lowest monthly mean 23.2° at Osage. The highest temperature reported was 62°, at Mount Pleasant, on the 9th. The lowest temperature reported was --9°, at Osage, on the 28th. The average monthly maximum was 51.8° and the average monthly minimum was 5.4°. The greatest daily range was 43°, at Elkader. The average of greatest daily ranges was 31.3°.

Precipitation.—The average precipitation for the state, as shown by the records of 123 stations was 1.00 inch, which is .24 of an inch below the normal. By sections the averages were as follows: Northern section, 1.21 inches, which is .13 of an inch above the normal; Central section,. .75

of an inch, which is .52 of an inch above the normal; Southern section, 1.05 inches, which is .31 of an inch below the normal. The largest amount reported was 2.28 inches at Plover. The least amount reported was .05 of an inch at Hancock. The greatest daily rainfall reported was 1.85 inches at Thurman, on the 9th. The average number of days on which .01 of an inch or more was reported was 5.

WIND AND WEATHER.—The prevailing direction of the wind was northwest. The highest velocity of wind reported was 58 miles per hour, from the northwest, at Sioux City, on the 24th. The average number of clear days was 10; partly cloudy, 7; cloudy, 14.

Annual Precipitation Chart 1907.


Scale of Shades
Less than 20 in
20 to 30 in
30 to 40 in
Over 40 in
LYON
OSCEOLA
DICKINSON
EMMET
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
O'BRIEN
CLAY
PALO ALTO
KOSSUTH
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
DES MOINES
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE

DATE OF LAST KILLING FROST IN SPRING AND FIRST IN FALL IN IOWA, 1907.

Stations	Killing Frost		Stations	Killing Frost	
	Last in Spring	First in Autumn		Last in Spring	First in Autumn
Afton	May 27	October 12	Jefferson	May 20	September 25
Albia	May 30	September 25	Keokuk	May 4	October 13
Algona	May 27	September 25	Keosauqua	May 4	October 12
Allerton	May 4	September 25	Knoxville	May 11	October 12
Alta	May 27	October 8	Larrabee	May 27	September 25
Alton	May 27	September 25	Le Mars	May 27	September 25
Amana	May 20	September 25	Lenox	May 27	September 25
Ames	May 20	September 25	Leon	May 16	October 12
Atlantic	May 27	September 25	Little Sioux	May 27	September 25
Audubon	May 20	September 25	Logan	May 11	September 25
Baxter	May 27	September 25	Marshalltown	May 20	September 25
Bedford	May 16	September 25	Mason City	May 27	September 25
Belle Plaine	May 27	September 25	Massena	May 27	October 8
Bloomfield	May 4	September 25	Mount Ayr	May 27	October 12
Bonaparte	May 11	October 12	Mount Pleasant	May 4	October 12
Boone	May 20	September 25	Mount Vernon	May 16	....
Britt	May 27	September 25	New Hampton	May 27	September 22
Burlington	May 5	September 25	Northwood	May 27	September 25
Carroll	May 27	September 25	Odebolt	May 20	September 27
Cedar Rapids	May 11	September 25	Ogden	May 27	....
Chariton	May 11	September 25	Olin	May 20	September 25
Charles City	May 20	September 25	Omaha	May 3	October 12
Clarinda	May 16	October 8	Onawa	May 16	October 12
Clear Lake	May 27	October 8	Osage	May 27	September 25
Clinton	May 16	September 25	Oskaloosa	May 11	October 12
Columbus Junction	May 11	September 25	Ottumwa	May 4	October 12
Corning	May 27	September 25	Pacific Junction	May 27	October 8
Corydon	May 4	September 25	Pella	May 11	October 12
Creston	May 27	September 25	Perry	May 20	September 25
Davenport	May 11	September 25	Plover	May 27	September 24
Decorah	May 21	September 25	Pocahontas	May 27	September 25
Delaware	May 27	September 25	Ridgeway	May 20	September 25
Denison	May 27	September 25	Rock Rapids	May 27	September 25
Des Moines	May 4	October 12	Rockwell City	May 27	October 12
De Soto	May 20	September 25	Saint Charles	May 11	October 12
Dows	May 27	September 25	Sheldon	May 27	September 25

DATE OF LAST KILLING FROST IN SPRING AND FIRST IN FALL IN IOWA, 1907—CONTINUED.

Stations	Killing Frost		Stations	Killing Frost	
	Last in Spring	First in Autumn		Last in Spring	First in Autumn
Dubuque	May 4	October 13	Sibley	May 27	September 25
Earlham	May 30	October 8	Sigourney	May 16	September 25
Elkader	May 27	September 25	Sioux Center	May 27	October 8
Elliot	May 16	September 25	Sioux City	May 15	October 12
Estherville	May 27	September 25	Stockport	May 11	September 25
Fayette	May 27	September 25	Storm Lake	May 27	September 25
Forest City	May 27	September 25	Stuart	May 20	October 12
Fort Dodge	May 27	September 25	Thurman	May 27	October 8
Grand Meadow	May 27	September 25	Tipton	May 4	October 13
Greene	May 27	September 25	Toledo	May 20	September 25
Greenfield	May 27	September 25	Wapello	May 5	September 25
Grinnell	May 20	September 25	Washington	May 11	September 25
Grundy Center	May 20	September 25	Washta	May 27	September 25
Guthrie Center	May 20	September 25	Waterloo	May 20	September 25
Hampton	May 27	September 25	Waukee	May 20	September 25
Hancock	May 15	September 25	Waverly	May 20	September 25
Harlan	May 16	September 25	Webster City	May 27	September 25
Hopeville	May 16	October 12	West Bend	May 27	September 25
Humboldt	May 20	September 25	Whitten	May 27	September 25
Independence	May 20	September 25	Wilton Junction	May 11	October 12
Indianola	May 4	September 25	Winterset	May 4	September 25
Inwood	May 27	September 25	Woodburn	May 20	....
Iowa City	May 11	September 25	Zearing	May 20	September 25
Iowa Falls	May 20	September 25			

CLIMATE AND CROP REVIEW, 1907.

The mean temperature and average precipitation for the state were about the normal for the year, though the monthly averages were more than usually variable. The mean temperature of the three winter months was 24.2°, which is 3.6° above the normal. The mean of the spring was 45.2°, which is 0.9° above the normal. The mean of the summer was 70.1°, which is 1.7° below the normal. The mean of autumn was 49.9°, which is 0.5° below the normal. February, March, November and December were much warmer than usual and all the other months were deficient in temperature. The average of February was 5.8°, and March 7.6° above the normal. The greatest deficiency in temperature occurred in April, May and June, the average of these three critical crop months being about 6° below the normal.

The average precipitation for the year, 31.62 inches, was 0.41 of an inch below the normal. The records of four months showed an excess, and the other months a deficiency in precipitation. The heaviest rainfall occurred in June and July, and the most harmful deficiency of moisture was in April and May, during the prevalence of abnormally cold weather. The following table shows the monthly average temperatures and precipitation, and departures from the normal for the year 1907:

Months	Mean Temp.	Departures	Precipitation	Departures
January	18.8	-1.1	1.52	†0.57
February	25.0	†5.8	0.71	-0.32
March	40.6	†7.6	1.35	-0.55
April	41.5	-7.7	1.32	-1.59
May	53.5	-7.2	3.48	-0.78
June	65.6	-2.9	5.35	†0.79
July	73.7	-0.4	7.27	†2.92
August	71.1	-0.8	4.33	†0.57
September	62.8	-0.7	2.76	-0.60
October	50.4	-2.1	1.50	-0.89
November	36.7	†1.3	1.03	-0.29
December	28.8	†5.9	1.00	-0.24
Annual	47.4	-0.2	31.62	-0.41

The above records show the abnormal features of the year, as affecting the growth of staple crops and the harvest of hay and cereal products.

The coldest weather of the winter occurred in the latter half of January and the first week in February. This was followed by two weeks of very mild weather, with favorable conditions for outside work and care of stock.

March was phenomenally mild with less than the usual amount of precipitation. The first half was typical March weather, with alternate freezing and thawing, but the latter half was excessively warm and bright, the maximum temperatures during the last decade ranging above 70° in portions of the southern section. The fields dried rapidly during that warm period, and farming operations were begun ten days to two weeks earlier than usual. The rainfall was less than normal, and the greater part occurred in the first half of the month. With two exceptions it was the warmest March since 1890. There was a great quickening of all vegetation, and in the larger part of the state seeding was begun between the 20th and 28th of the month, and a large acreage was plowed for corn.

April was a record-breaker as to temperature and precipitation, being the coldest and driest of which we have state-wide records. The only mean temperature was 7.7° below the normal. At several stations the records show that the month was about a degree colder than the preceding March. The average monthly minimum for the state was 16.4°, which shows the remarkable persistence of freezing weather. The precipitation was less than half the usual amount for April. The conditions were unfavorable for germination of seed and growth of all forms of vegetation, but the soil was in fine tilth and favorable for plowing and planting. Fruit buds were well advanced by the warm weather in March, but blooming was greatly retarded by the abnormally low temperatures in April and May, and the heavy frosts were very destructive to all early varieties of fruits, especially in the southern half of the state. Seeding operations were generally completed earlier than usual, but in respect to germination and growth of farm crops the season was two to three weeks late.

Following the coldest April of record in this state, the month of May was also a record-breaker as to temperatures, the mean being 7.2° below the normal. The lowest temperatures occurred on the 3d and 4th, and the average monthly minimum was 22.1°. Frosts were reported in all districts in every week of the month. Light snow flurries were general on the 3d and 15th. During the first and second decades there were many complaints of insufficient moisture for the germination of seed and growth of grass. But the last decade brought copious showers, and generally sufficient moisture to break the drouth and replenish supplies of water for stock. The bulk of the corn acreage was planted under ideal conditions of soil, but germination was slow, much replanting was done, and the stand was very far below the average. The wet and cold weather during the latter part of the month was favorable for grass and early sown small grain.

June was cooler than usual, and exceedingly showery, with general deficiency of sunshine, especially during the first half of the month. The conditions were quite unfavorable in large portions of the state for cultivation of corn, causing abandonment of many thousands of acres which were planted on lowlands in the dry period of May. The latter half of the month was more favorable, and crop conditions were more encouraging to farmers. Pastures and meadows were much improved, and nearly up to the average.

July was nearly normal in temperature, but the rainfall was about 3.00 inches above the average. Rain fell in some parts of the state every day during the month. In the first decade the wet weather caused much difficulty and delay in cleaning out the corn fields. And later in the month the frequent showers interfered seriously with the harvest of grain and hay, impairing the quality of these products. Heat and humidity caused rust of oats and spring wheat.

The mean temperature of August was less than a degree below the normal, and there was about the usual amount of sunshine. The rainfall averaged 0.57 of an inch above the normal, but it was quite unequally distributed, about one-third of the state receiving less than three inches, the deficiency being almost in the western districts. There were more than the usual number of wind squalls and hailstorms, causing considerable damage to crops in scattered localities. The conditions were generally favorable for pastures, and corn made fair progress toward maturity, though the crop was two to three weeks later than the average at the close of August.. Good progress was made in threshing small grain in the western districts.

September was slightly cooler than usual, with frequent alternations in temperature. The second decade was the warmest period, and the average of the last decade was about 20 degrees below the preceding ten days. Heavy frost occurred on the 22d, and heavy to killing frost visited every county on the morning of the 25th, causing material damage to immature portions of the corn crop. The percentage of sunshine was about the normal. Considerable damage was caused by wind and hail in the afternoon and evening of the 7th.

October will stand upon the records as one of the finest and most agreeable autumnal months ever enjoyed in this section. The average temperature was about 2° below the normal, but the percentage of sunshine was considerably above the average, and the clear, crisp air of the coldest mornings was one of the most enjoyable features of the month. There were about three weeks of typical Indian summer weather, and there was very little discomfort in the few stormy days. During the past eighteen years there have been 6 colder and 11 warmer Octobers. The average precipitation was 1.50 inches, which is 0.89 of an inch below the state normal. There have been but three dryer Octobers since 1889. There were showers distributed over the larger part of the state during the first three and last three days of the month, and also some local rainfall on the 15th. The heaviest rainfall was recorded in the central district, in the valley of the Des Moines river. In over four-fifths of the counties the amount was less than 2 inches. Generally conditions were highly favorable for drying out the corn crop, preparatory to husking and cribbing. Some progress was made during the last decade in the corn harvest, but as a rule the ears were not dry enough to be cribbed. Considerable progress was made in plowing, with the soil in good condition. The harvest of potatoes, apples and other minor crops progressed under favorable conditions, and the output was generally below the average of recent years. All in all the month of October contributed very largely to the material prosperity of the state.

November was exceptionally favorable, the average temperature and sunshine being above the normal. There has not been a more favorable autumn for haresting the late maturing crops, and for preparing the ground for the coming spring. The corn crop was quite thoroughly dried out, and at the close of the month more than 90 per cent of that valuable cereal was safely stored in cribs. Though there were many frosty nights and considerable freezing weather, yet the ground was generally in good condition for plowing until the close of the month. The pasture afforded considerable sustenance to stock during the month and conditions were favorable to fall wheat and rye.

The average temperature of the state was about 6 degrees above the normal in December, with less than the usual precipitation, and a large percentage of cloudiness. It was unusually fine and agreeable, with excellent conditions for outdoor business. The year closed with benign conditions throughout the central valley.

CROP REPORT. JUNE 1, 1907.

Reports received June 1st from correspondents of the Iowa Weather and Crop Service shows a slight increase in the acreage of corn, and a small general decrease in the area seeded to spring wheat, oats, rye and barley. The estimated condition of all crops is below the average of recent years, as a result of unseasonable weather in April and May. Considering the adverse conditions prevalent since April 1st the estimates are materially higher than had been anticipated.

Corn.—The dry weather prevalent in April and the larger part of May was favorable for plowing and preparation of soil for this great staple, and this resulted in an average increase of 3 per cent as compared with the acreage planted in 1906. So the acreage of corn is about 103; and the average condition on June 1st was rated as 88 per cent. Last year at corresponding date it was 99 per cent.

Wheat.—There appears to be a reduction of about 6 per cent in the area of spring wheat. The condition of winter wheat is 91 per cent and spring wheat 88. Last year the estimates were 98 per cent.

Oats.—The acreage of oats is placed at 98 per cent and the average condition 89 per cent. Last year the condition on June 1st was 96 per cent.

Barley.—Acreage seeded, compared with last year, 94 per cent (decrease 6 per cent); and the average condition is 81 per cent.

Rye.—Acreage 91; estimated condition 90 per cent, as compared with 97 per cent last year.

Flax.—Area seeded 87 per cent, condition, 83 per cent.

Potatoes.—Acreage planted 100 per cent; condition 86 per cent. Last year condition 101 per cent.

Meadows.—Reports indicate a slight reduction in the area of meadows, the acreage being about 95 per cent. The condition is placed at 74 per cent. The condition last year was 92 per cent. The hay crop is likely to be 20 to 25 per cent of an average.

Pastures are about 100 per cent in acreage, and 80 per cent in condition.

Condition of Fruit.—Apples, 55 per cent; peaches, 27; plums, 42; cherries, 30; grapes, 80; strawberries, 78; raspberries, 81; blackberries, 86.

Condition of Live Stock.—Cattle, 85 per cent; hogs, 96; horses, 98; sheep, 97; foals, 95; spring pigs, 83.

CROP REPORT, JULY 1, 1907.

Following is a summary of reports received from crop correspondents of the Iowa Weather and Crop Service, showing the estimated condition of the staple crops July 1, 1907.

Corn, 76 per cent; spring wheat, 90; oats, 89; barley, 90; rye, 94; flax, 91; hay crop, 78; pastures, 92; potatoes, 98; apples, 42; grapes, 80.

The relatively low estimate of corn is due to the deficient stand, as compared with the average.

Conditions Last Year.—Corn, 99 per cent; wheat, 94; oats, 84; barley, 91; rye, 93; flax, 92; potatoes, 94; hay, 75; apples, 70; grapes, 85.

CROP REPORT, AUGUST 1, 1907.

Following is a summary of reports received from crop correspondents of the Iowa Weather and Crop Service, showing the estimated condition of staple crops August 1, 1907:

Corn, 79 per cent; spring wheat, 85; oats, 76; barley, 85; flax, 88; hay, 80; potatoes, 90; pastures, 100; apples, 40; grapes 84.

Conditions Last Year.—Corn, 99 per cent; wheat, 93; oats, 90; flax, 95; hay, 79; pastures, 83; potatoes, 91; apples, 70; grapes, 94.

IOWA CROPS, 1907.

Final Report, Showing Total Yield of Soil Products, and Value at Farm Prices December 1, 1907.

On account of abnormal weather during the spring and summer, the farm products of this season fall materially below the very heavy output of 1906, but as compared with the general averages of the past two decades the showing is fairly satisfactory. The principal shortage is in the yield and quality of corn and oats, the other cereals coming nearly up to the average, while the yield of grass in pastures and meadows was somewhat better than usual.

Corn.—The soil was dry and in fine tilth at planting time, and reports showed a total acreage of 8,858,000 acres. The heavy rains and flooded fields in June caused the abandonment of a considerable area, amounting to an estimated total of 530,390 acres. The acreage harvested was about 8,327,690 acres, and the average loss of acreage was about 6 per cent for the whole state, though variable in different sections.

The tabulated reports by counties show the yield of corn to have been quite variable, ranging from 20 to 35 bushels per acre. The average for the state appears to be 29.6 bushels per acre, and the total yield is 246,898,460 bushels, as against 41 per acre and a total of 388,348,000 bushels last year. The average farm price of corn is reported to be 44 cents per bushel, and the total value of the crop is $108,635,322. Last year's corn crop was estimated at $128,155,143, on December 1st, at an average of 33 cents per bushel.

Winter Wheat.—This cereal is now reported to be grown in 81 counties, with satisfactory results. The average yield was 19.8 bushels per acre and the total was 1,698,101 bushels. The value of the crop was $1,408,423, the average price being 83 cents per bushel.

Spring Wheat.—The area of spring wheat harvested was 335,340 acres and the total yield was 4,402,320 bushels, the average being 13 bushels per acre. At 81 cents per bushel the value was $3,565,879.

Oats.—The oats crop was very disappointing in yield and quality. The area sown was 4,536,170 acres. The returns show an average of 24.5 bushels per acre, and a total of 111,190,400 bushels. At 39 cents per bushel the crop is worth $43,364,256.

Barley.—Area seeded, 397,210 acres. Average yield, 24.6 bushels per acre. Value, $5,935,998, at 60 cents per bushel.

Rye.—Area seeded, 52,450 acres. Average yield, 17 bushels per acre. Total yield, 900,060 bushels. Value, $549,036, at 61 cents per bushel.

Flax.—Area seeded, 42,790 acres. Product 10.8 bushels per acre. Total, 461,960 bushels. Value, $408,640, at an average of 98 cents per bushel.

Potatoes.—Area planted, 117,350 acres. Yield, 84 bushels per acre. Total, 9,847,430 bushels. Value, $6,105,406, at an average of 62 cents per bushel.

Hay (tame).—Area harvested, including timothy, clover and all cultivated forage crops, 3,372,470 acres. Total yield, 5,117,878 tons—an average of 1.5 tons per acre. Value, $43,401,963—an average of $8.50 per ton.

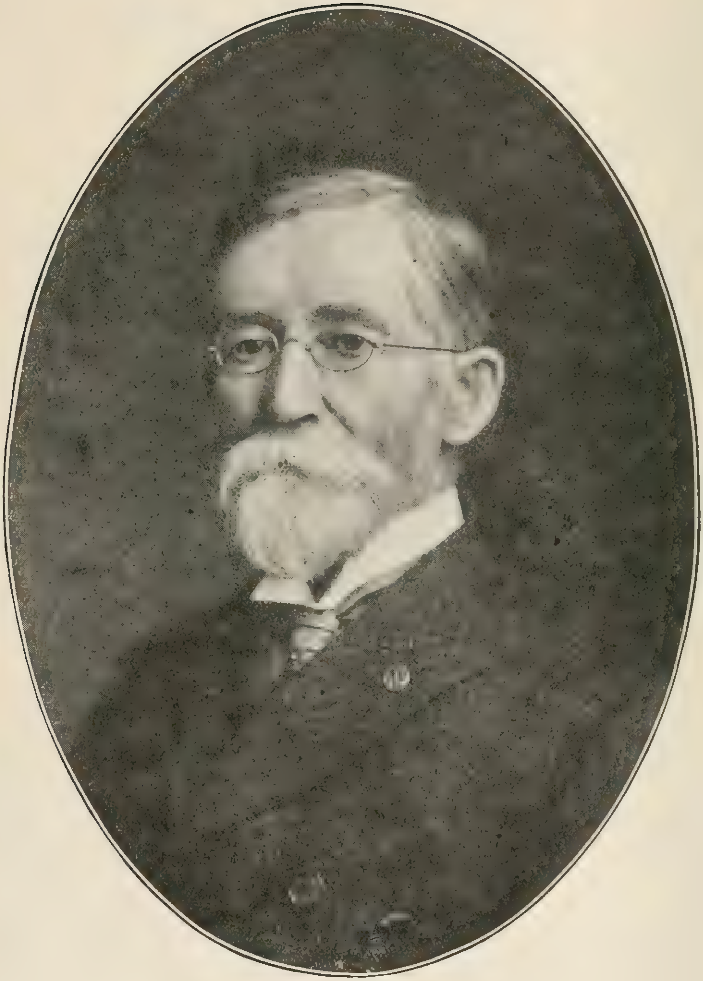
Hay (wild).—Area, 896,260 acres. Yield, 1.3 tons per acre. Total crop, 1,172,590 tons. Value at $6.75 per ton, $7,914.982.

Pasturage and Grazing.—This includes pastures, and grazing in meadows and grain fields after harvest, and in corn fields during the fall and winter. The total value is estimated at $90,000,000, or an average value of a little over $400 per farm.

TABULATED CROP SUMMARY.

Crops	Total Yield	Farm Values Dec. 1, 1907
Corn	246,898,460 bus.	$ 108,635,322
Winter wheat	1,698,101 bus.	1,408,423
Spring wheat	4,402,320 bus.	3,565,879
Oats	111,190,400 bus.	43,364,256
Barley	9,893,330 bus.	5,935,998
Rye	900,060 bus.	549,036
Flax	461,960 bus.	408,640
Potatoes	9,847,430 bus.	6,105,406
Hay (tame)	5,117,878 tons	43,401,963
Hay (wild)	1,172,590 tons	7,914,982
Pasturage and grazing	Estimated	90,000,000
Buckwheat	Estimated	90,000
Sweat potatoes	Estimated	145,000
Sorghum and broom corn	Estimated	180,000
Timothy and clover seed	Estimated	1,500,000
Alfalfa and millet	Estimated	510,000
Sweet corn	Estimated	750,000
Fruit crops	Estimated	2,250,000
Garden truck	Estimated	6,000,000
Total		$ 322,715,905

The above figures take no account of the increment of value derived from the consumption of soil products in the live stock industry of this state.



JOHN R. SAGE

FOR OVER SEVENTEEN YEARS DIRECTOR OF THE IOWA
WEATHER AND CROP SERVICE.

THE RETIREMENT OF DIRECTOR SAGE.

(Wallaces' Farmer.)

Hon. J. R. Sage has voluntarily retired from the office of director of the Iowa Weather and Crop Service, in which for nearly eighteen years he has rendered distinguished service not merely to the farmers of Iowa but of the whole United States.

Like most eminently successful men, Mr. Sage has given the public a vast amount of service for which he has not and in the very nature of things could not receive compensation. He has been a student of weather and all that affects it for half a century and more. He has done more than any other man to teach Iowa farmers weather science, to point out to them the plan of the Creator in watering this great plain from the Gulf to Hudson Bay and from the Alleghenies to the Rockies, and has told them all that is certainly known about cyclones and tornadoes, the laws of electricity and the relation of timber and rainfall to crop production. He has been a careful and thorough student of agricultural problems, and in the faithful discharge of the duties of his office is rounding out a career of distinguished usefulness.

No man achieves such results without preliminary training, and it may be interesting to know something of the biography of Mr. Sage. His ancestors were among the first settlers of Connecticut in the seventeenth century. Twenty-one of his relatives were in the revolutionary war. His father settled in the poor, hilly district of Schoharie county, New York, in the center of the anti-rent agitation, which, by the way, was so extensive in that section that it turned the vote of the state of New York over to James K. Polk and defeated Henry Clay.

Mr. Sage was born on December 27, 1832, during the first term of Andrew Jackson's administration. Located as above described, he graduated from the "school of hard knocks." He was especially fortunate in this, however, that there was in those days a magnificent circulating library, which, unlike those of today, was made up of solid reading; no novels. His father being librarian, he had free access to these books. Among them were the writings of Benjamin Franklin, and it was the inspiration of these that led him first to scientific research. When eighteen he became a school teacher in western New York, and there fell in with Thomas K. Beecher, through whose influence he entered the ministry, continuing in it for twenty years and organizing several churches. He entered Company A of the 121st New York Regiment as a high private and during a temporary absence was unanimously elected chaplain. He resigned on account of ill health and went back to preaching. He came to Iowa in 1869, and while preaching purchased a farm and began his study of agricultural problems.

While Mr. Sage has voluntarily resigned from the work of the Weather and Crop Service, in accordance with a plan of which he has frequently spoken to us for the last two years, he is not ready for an obituary notice, but is planning to complete some work which he has had in mind for a number of years and with which the duties of his position seriously interfered.

FINAL CROP REPORT, 1907.

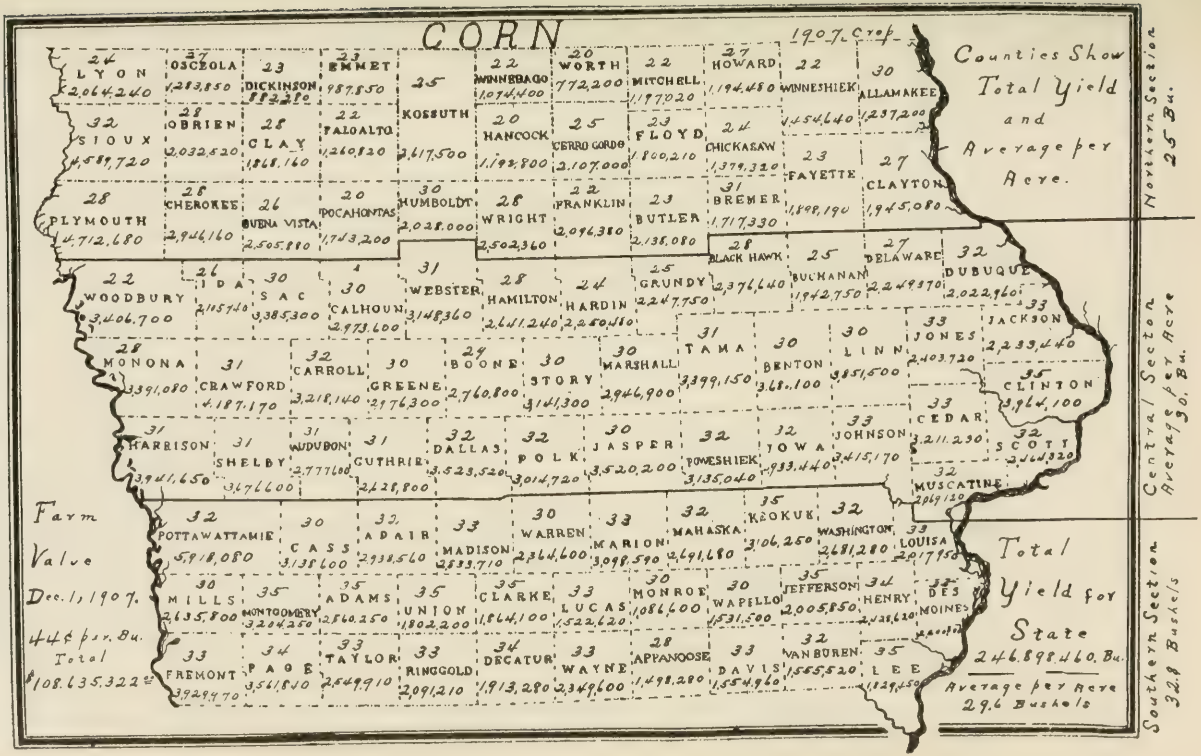
AVERAGE YIELD PER ACRE AND TOTAL PRODUCTS—BY COUNTIES.

Counties	Winter Wheat		Spring Wheat		Corn		Oats		Rye		Barley		Flax Seed		Potatoes		Hay (Tame)		Hay (Wild)	
	Bushels per acre	Total bushels	Bushels per ace	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acrce	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Tons per acre	Total tons	Tons per acre	Total tons
Adair	20	1,080	12	30,480	32	2,938,560	26	901,420	18	1,710	28	66,360	----	--------	80	77,600	1.5	72,220	1,2	5,300
Adams	22	17,006	16	20,260	35	2,560,250	24	513,560	16	2,880	30	51,600	----	--------	88	51,040	1.2	39,060	1.2	2,420
Allamakee	16	18,160	10	6,700	30	1,237,200	25	1,741,000	17	13,090	25	295,250	10	310	70	79,800	1.3	56,140	1.5	1,480
Appanoose	17	16,260	14	280	28	1,498,280	24	490,800	15	9,150	20	2,200	----	--------	80	52,000	1.3	100,120	1.3	2,130
Audubon	20	800	12	70,360	31	2,777,600	21	749,280	20	300	----	164,920	----	--------	100	78,000	1.3	42,360	1.5	6,030
Benton	20	660	14	6,440	30	3,686,100	26	1,842,880	18	5,580	27	313,740	----	--------	82	129,560	1.4	66,030	1.4	14,300
Black Hawk	20	640	12	1,680	28	2,376,640	26	1,382,420	17	27,880	30	123,000	----	--------	87	248,820	1.8	54,750	1.5	17,110
Boone	----	--------	10	16,300	29	2,760,800	24	1,275,360	18	5,240	25	18,500	----	--------	75	81,750	1.5	36,910	1.2	22,710
Bremer	20	540	----	--------	31	1,717,330	28	1,420,160	17	10,710	25	85,500	10	1,100	65	146,250	1.7	33,430	1.5	27,960
Buchanan	18	252	15	1,650	25	1,942,750	20	1,011,800	14	6,860	26	79,300	9	--------	68	68,680	1.4	53,170	1.0	14,510
Buena Vista	18	468	12	15,840	26	2,505,880	30	2,335,300	18	1,980	28	31,920	12	5,040	90	115,200	1.5	34,480	1.6	31,500
Butler	----	--------	14	2,940	23	2,138,080	22	1,545,500	16	20,960	30	63,300	----	--------	95	140,600	1.5	36,160	1.5	17,860
Calhoun	18	630	12	8,520	30	2,973,600	31	2,198,520	16	3,360	25	51,250	9	2,790	92	95,680	1.3	23,690	1.2	22,920
Carroll	20	1,420	12	88,920	32	3,218,140	25	1,439,500	16	1,120	26	102,440	----	--------	85	148,750	1.5	35,560	1.5	19,990
Cass	20	28,800	12	103,320	30	3,138,600	21	857,010	16	2,560	24	81,360	----	--------	70	90,300	1.8	75,920	1.4	4,040
Cedar	15	5,475	14	14,580	33	3,211,230	25	804,500	14	7,840	25	303,000	----	--------	90	100,800	1.6	74,000	1.0	310
Cerro Gordo	----	--------	10	4,300	25	2,107,000	23	1,734,430	9	7,110	18	36,180	8	4,880	88	122,120	2.0	63,140	1.5	18,910
Cherokee	20	1,660	14	50,540	28	2,946,160	28	1,946,160	----	--------	29	102,370	----	--------	120	153,600	1.6	47,470	1.2	16,570
Chickasaw	18	720	15	8,400	24	1,379,320	23	1,439,030	18	8,100	25	113,000	12	30,960	105	120,750	1.8	19,688	1.5	23,740
Clarke	18	9,944	----	--------	35	1,864,100	29	470,670	16	3,040	22	9,240	----	--------	68	28,560	1.2	48,110	1.2	250
Clay	15	1,515	12	13,440	28	1,868,160	30	1,975,200	15	1,800	25	39,750	8	1,280	100	78,000	1.5	43,110	1.2	22,230
Clayton	18	18,782	12	15,360	27	1,945,080	23	1,341,360	15	30,300	22	290,620	----	--------	95	166,250	1.5	77,110	1.5	4,830
Clinton	16	7,440	14	17,920	35	3,964,100	24	948,960	18	--------	25	205,250	----	--------	95	127,300	1.3	66,530	1.0	4,120
Crawford	22	2,882	15	289,650	31	4,187,170	26	1,531,660	20	4,800	28	101,360	----	--------	96	168,960	1.5	67,360	1.5	11,370
Dallas	16	9,344	12	15,480	32	3,523,520	22	985,040	20	9,600	25	34,250	----	--------	94	64,860	1.4	38,550	1.4	11,390
Davis	18	18,234	----	--------	33	1,554,960	25	473,000	15	18,600	----	--------	----	--------	75	39,000	1.5	64,690	1.5	90
Decatur	19	25,498	----	--------	34	1,913,280	27	437,670	18	11,520	----	--------	----	--------	82	38,540	1.4	66,790	1.3	920
Delaware	18	756	15	2,550	27	2,249,370	22	882,640	18	21,780	25	328,000	----	--------	65	88,320	1.3	67,740	1.2	8,770
Des Moines	22	73,194	----	--------	35	2,200,800	25	566,500	19	21,280	30	23,400	----	--------	78	88,920	1.3	34,220	1.3	720
Dickinson	----	--------	14	14,840	23	882,280	25	1,051,750	16	1,440	28	91,560	10	7,900	90	55,800	1.4	21,110	1.2	20,730

Dubuque	20	1,980	12	12,600	32	2,022,960	22	995,720	16	5,760	30	174,300	----	-------	70	172,200	1.8	86,610	1.0	3,170
Emmet	----	---------	16	11,360	23	987,850	26	1,223,460	15	1,650	31	18,200	12	8,280	92	45,080	1.6	29,930	1.2	14,880
Fayette	20	3,700	14	11,340	23	1,898,190	21	1,375,710	20	64,000	26	47,320	10	9,300	85	136,850	1.5	81,760	1.2	15,430
Floyd	----	---------	12	2,160	23	1,800,210	24	1,730,880	16	13,280	27	68,850	10	10,200	70	106,400	1.5	48,340	1.3	6,470
Franklin	----	---------	12	19,230	22	2,096,380	26	1,964,820	16	5,920	20	29,000	----	-------	90	127,800	1.3	36,630	1.0	16,130
Fremont	22	58,520	12	38,760	33	3,929,970	23	345,690	20	6,400	22	5,060	----	-------	60	35,400	1.8	38,170	1.5	6,310
Greene	20	680	13	4,550	30	2,976,300	26	1,288,560	20	5,200	28	45,640	10	600	76	77,520	1.2	30,160	1.2	19,470
Grundy	15	855	12	10,560	25	2,247,750	24	1,590,960	16	800	28	158,940	----	-------	90	268,200	1.8	42,130	1.5	13,400
Guthrie	20	4,480	12	33,840	31	2,628,800	26	868,660	16	2,240	25	38,750	----	-------	85	78,200	1.2	42,190	1.2	7,020
Hamilton	16	4,592	15	29,110	28	2,641,240	25	1,555,250	20	1,800	30	15,900	10	3,000	65	66,950	1.7	42,210	1.5	30,720
Hancock	----	---------	10	18,100	20	1,192,800	21	1,694,700	20	4,200	24	40,320	10	5,200	90	76,500	1.8	39,430	1.5	25,170
Hardin	16	1,600	13	32,110	24	2,250,480	23	1,408,750	16	2,400	25	34,250	9	450	81	96,390	1.6	39,950	1.6	25,280
Harrison	22	57,860	12	278,520	31	3,941,650	24	588,240	15	13,650	30	70,500	----	-------	65	87,750	2.0	42,240	1.2	15,660
Henry	24	28,392	----	---------	34	2,428,620	21	596,610	20	30,400	25	13,000	----	-------	85	48,300	1.8	45,450	1.0	100
Howard	16	736	14	11,360	27	1,194,480	22	1,125,520	20	6,800	25	194,500	12	99,240	65	50,050	1.5	44,720	1.2	13,400
Humboldt	----	---------	14	42,700	30	2,028,000	31	1,709,030	20	2,200	30	27,300	10	2,700	120	80,400	1.4	41,910	1.2	18,690
Ida	15	3,780	13	83,070	26	2,105,740	25	968,500	20	800	28	220,080	----	-------	96	90,240	1.4	36,790	1.1	3,890
Iowa	20	7,430	18	19,260	32	2,933,440	23	917,200	20	10,400	22	54,780	----	-------	70	94,500	1.5	72,550	1.2	360
Jackson	15	5,235	12	14,760	33	2,233,440	24	761,520	20	2,200	26	173,940	---	-------	95	116,850	1.8	113,590	1.5	2,710
Jasper	18	7,560	14	56,280	30	3,520,200	23	1,188,870	15	7,800	26	43,680	---	-------	80	107,200	1.5	69,430	1.5	3,400
Jefferson	19	37,069	15	1,560	35	2,005,850	25	560,250	17	29,240	----	16,640	----	-------	91	39,130	1.3	43,950	1.5	60
Johnson	22	5,434	15	12,450	33	3,415,170	26	1,231,100	15	21,900	30	142,500	---	-------	80	105,300	1.5	78,990	1.0	1,920
Jones	20	760	14	4,900	33	2,403,720	26	750,100	19	14,250	30	221,100	--	-------	100	118,000	1.7	87,890	1.0	880
Keokuk	20	17,350	15	9,600	35	3,106,250	26	917,020	18	16,200	25	54,750	--	-------	85	74,700	1.8	80,850	1.2	310
Kossuth	----	---------	12	50,620	25	2,617,500	23	2.654,660	16	6,560	26	65,520	10	14,200	70	109,900	1.2	41,420	1.3	76,660
Lee	23	213,501	----	---------	35	1,829,450	28	600,880	19	59,280	25	1,750	----	-------	82	113,160	1.8	70,930	1.2	3,710
Linn	20	1,320	13	9,490	30	3,851,500	24	1,166,160	20	15,600	30	38,700	----	-------	75	144,000	1.4	65,070	1.3	7,500
Louisa	18	59,256	14	1,120	33	2,017,950	25	569,000	16	30,720	22	11,220	----	-------	75	44,250	1.8	33,140	1.5	830
Lucas	17	13,566	15	750	33	1,522,620	23	303,140	16	8,640	20	2,200	----	-------	72	29,520	1.4	57,430	1.0	780
Lyon	16	4,064	14	119,000	24	2,064,240	21	1,776,050	18	1,980	22	80,080	----	-------	98	133,280	1.5	25,680	1.5	16,900
Madison	20	6,720	15	14,100	33	2,833,710	22	517,440	15	490	25	85,250	----	-------	70	47,300	1.4	57,710	1.3	28.870
Mahaska	21	13,755	14	12,460	32	2,691,680	20	648,600	15	6,150	26	83,720	----	-------	75	72,000	1.5	53,560	1.2	1,360
Marion	18	26,496	14	33,320	33	3,098,590	20	565,200	17	7,650	24	58,080	---	-------	90	64,800	1.3	45,670	1.0	890
Marshall	20	6,660	15	34,650	30	2,946,900	31	1,677,410	18	6,840	23	35,340	---	-------	98	148,960	1.5	55,450	1.5	1,340
Mills	24	34,704	13	63,050	30	2,635,800	24	374,880	16	4,320	25	27,250	----	-------	70	54,600	1.5	30,370	1.5	7,600
Mitchell	----	---------	12	7,440	22	1,197,020	25	1,772,750	16	3,360	24	173,760	11	86,460	72	91,440	1.5	42,310	1.5	4,260
Monona	16	162,672	11	111,760	28	3,391,080	30	858,600	16	5,440	31	84,010	--	-------	90	108,900	1.8	19,090	1.5	24,820
Monroe	18	26,632	15	600	30	1,086,600	19	177,460	15	4,800	20	5,900	----	-------	89	46,280	1.2	39,430	1.0	150
Montgomery	20	49,980	14	131,840	35	3,204,250	23	415,610	20	1,400	25	42,000	---	-------	90	60,300	1.8	52,410	2.0	2,220
Muscatine	22	21,186	15	12,300	32	2,069,120	22	455,180	18	41,140	24	214,560	---	-------	73	161,330	1.8	44,120	1.5	2,490
O'Brien	15	1,950	10	30,500	28	2,032,520	25	1,541,250	15	1,650	30	393,300	8	1,520	110	146,300	1.9	51,540	1.8	21,540
Osceola	----	---------	12	240,840	27	1,283,850	28	1,967,560	16	3,840	24	249,040	9	8,190	85	49,300	1.5	27,240	1.3	12,190
Page	24	151,680	12	54,720	34	3,561,840	22	431,860	18	11,700	30	41,700	---	-------	90	84,700	1.3	40,860	1.5	6,360
Palo Alto	----	---------	15	10,800	22	1,260,820	23	1,310,080	12	720	24	16,560	8	6,080	100	122,000	1.5	21,430	1.0	31,890
Plymouth	18	36,864	11	484,550	28	4,712,680	25	2,060,500	15	2,550	23	241,730	9	3,690	75	136,500	1.5	40,530	1.5	37,170
Pocahontas	----	---------	12	6,120	20	1,743,200	22	1,730,740	19	1,470	21	13,230	10	9,100	85	86,700	1.5	25,470	1.2	33,870
Polk	16	13,248	13	13,520	32	3,014,720	23	946,220	18	5,760	25	11,750	---	-------	75	153,750	1.5	40,860	1.2	8,340
Pottawattamie	17	17,340	11	211,310	32	5,918,080	20	904,800	15	4,050	30	62,400	----	-------	88	241,120	1.5	65,530	1.3	15,050
Poweshiek	18	414	15	17,100	32	3,135,040	25	1,006,250	15	2,850	27	108,270	----	-------	80	78,400	1.9	83,180	1.5	3,440

AVERAGE YIELD PER ACRE AND TOTAL PRODUCTS BY COUNTIES—CONTINUED.

Counties	Winter Wheat		Spring Wheat		Corn		Oats		Rye		Barley		Flax Seed		Potatoes		Hay (Tame)		Hay (Wild)	
	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Tons per acre	Total tons	Tons per acre	Total tons
Ringgold	19	13,889	16	640	33	2,091,210	25	495,500	20	5,800	30	4,800			78	32,760	1.4	69,520	1.2	420
Sac	20	2,300	12	36,720	30	3,385,300	26	1,640,340	17	850	31	163,590	9	1,530	85	90,960	1.5	30,120	1.5	20,750
Scott	21	27,237	13	28,730	32	2,464,320	21	509,880	14	17,080	22	648,560			80	507,200	2.0	73,420	1.5	7,650
Shelby	18	3,280	12	182,880	31	3,676,600	25	1,088,250	15	1,650	23	161,460			78	99,060	1.4	52,790	1.2	7,740
Sioux	22	20,614	14	449,680	32	4,589,720	30	2,294,400	15	1,500	25	711,500	9	1,080	95	133,950	2.0	46,920	1.5	30,120
Story	16	3,184	12	7,440	30	3,141,300	22	1,102,640	17	4,250	23	16,560			75	61,500	1.5	42,070	1.2	15,460
Tama	20	440	12	30,240	31	3,399,150	26	1,421,680	20	8,000	25	303,000			90	169,200	1.5	77,050	1.0	4,580
Taylor	22	50,798	11	2,090	33	2,549,910	23	280,830	16	11,360	20	37,400			92	56,120	1.7	76,020	1.2	1,810
Union	16	4,960	12	1,080	35	1,802,200	26	423,540	16	1,760	24	10,560			98	62,720	1.2	42,970	1.0	1,220
Van Buren	17	36,822			32	1,555,520	22	414,200	12	22,200					60	29,400	1.5	61,900	1.0	210
Wapello	20	34,840	12	960	30	1,531,500	22	389,180	16	16,480	23	15,180			80	65,600	1.5	45,750	1.5	30
Warren	21	19,488	14	13,860	30	2,364,600	18	455,040	16	6,560	22	26,840			60	61,800	1.6	70,840	1.2	1,740
Washington	18	18,540	12	2,760	32	2,681,280	23	928,970	16	11,040	30	43,800			80	54,400	1.6	62,300	1.5	160
Wayne	20	7,960			33	2,349,600	25	563,500	15	4,650					100	51,000	1.5	99,190	1.5	4,530
Webster			15	48,600	31	3,148,360	26	2,040,740	18	2,520	25	21,500			90	104,400	2.0	44,760	1.5	32,490
Winnebago			12	48,960	22	1,074,400	25	1,058,000	16	1,260	24	36,480	9	16,290	70	47,600	1.5	22,120	1.0	19,370
Winneshiek	16	7,312	13	41,210	22	1,454,640	20	1,423,400	12	4,560	21	333,060	11	79,310	60	70,200	1.5	70,860	1.2	14,300
Woodbury	21	74,256	13	185,760	22	3,406,700	24	1,350,240	16	7,260	25	37,050	10	1,500	82	145,780	1.6	37,050	1.5	23,370
Worth			15	26,400	20	772,200	21	1,248,030	14	2,240	22	28,320	10	37,300	60	37,200	1.7	30,840	1.5	21,200
Wright			13	43,420	28	2,502,360	25	1,979,500			24	28,340	8	2,480	93	92,070	1.7	54,870	1.2	13,170
Total for State		1,698,101		4,402,320		246,898,460		111,190,400		900,060		9,893,330		461,960		9,847,430		5,117,878		1,172,590
Average per acre	19.8		13		29.6		24.5		17		24.6		10.8		84		1.5		1.3	



CORN

1907 Crop

Counties Show Total Yield and Average per Acre.

Farm Value Dec. 1, 1907. 44¢ per Bu. Total $108.635.322⁰⁰

Total Yield for State 246.898.460. Bu.

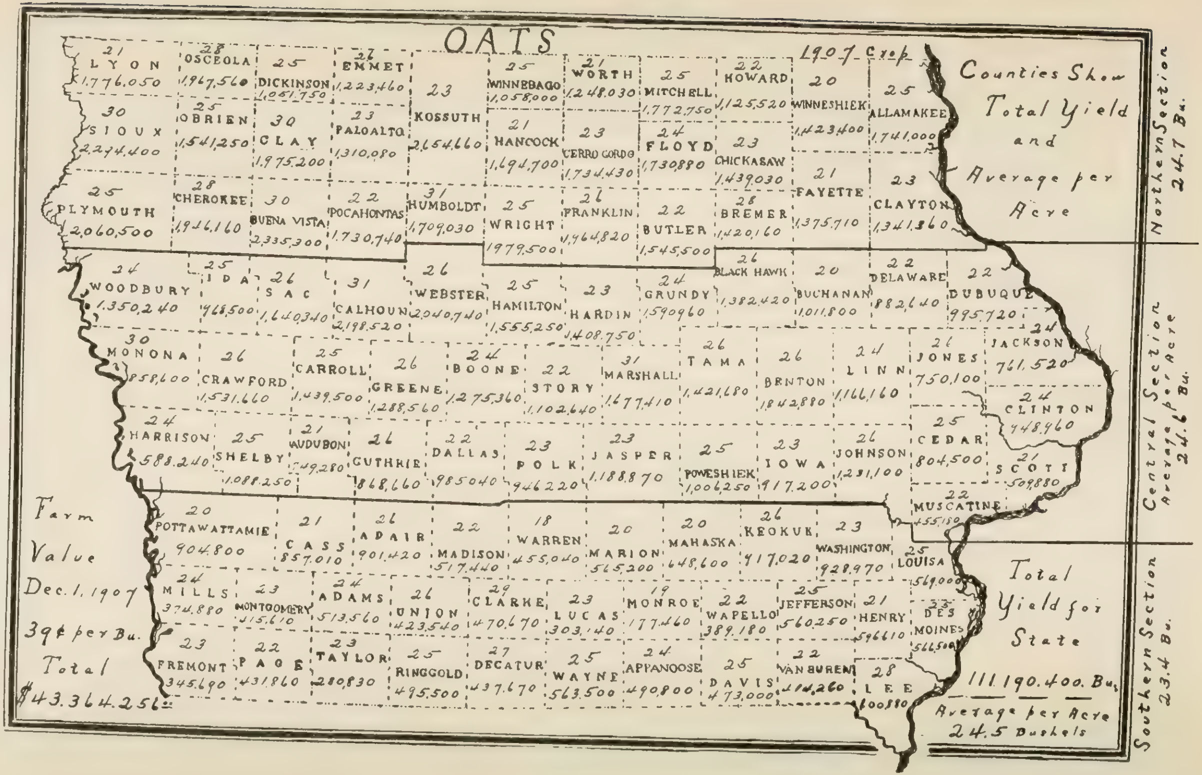
Average per Acre 29.6 Bushels

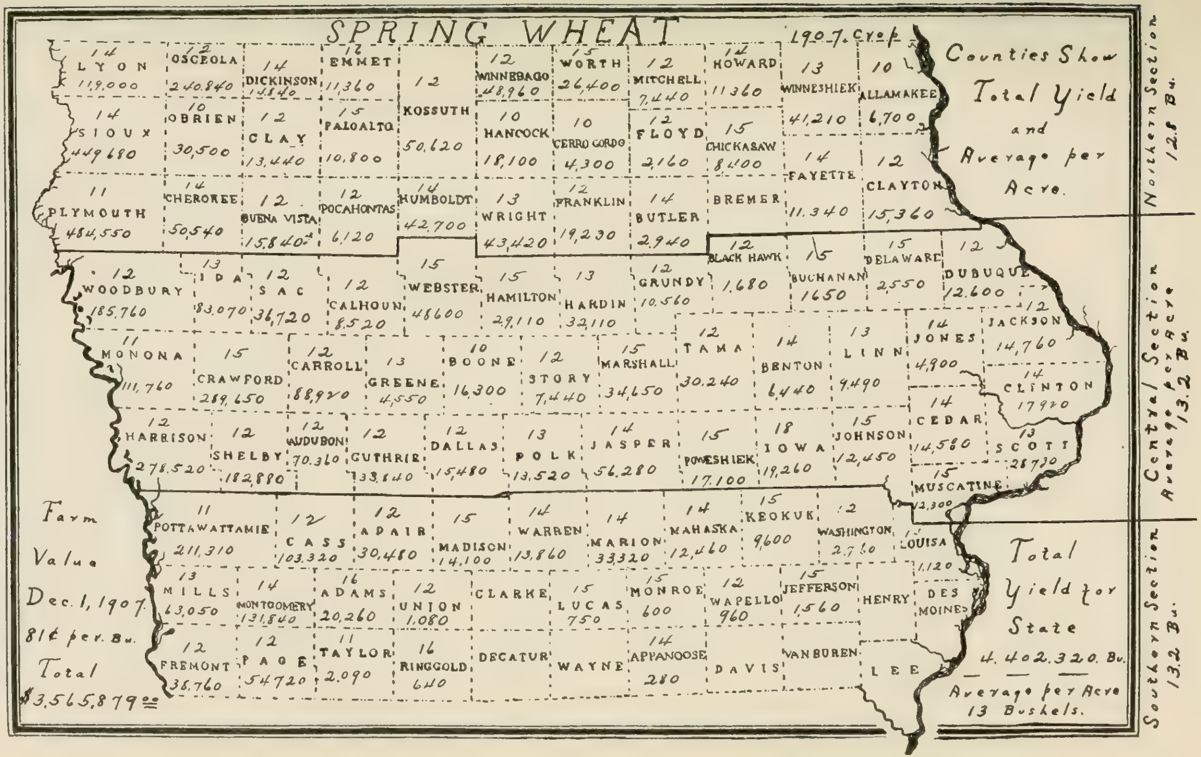
Northern Section 25 Bu.

Central Section Average per Acre 30. Bu.

Southern Section 32.8 Bushels

24 LYON 2,064,240
27 OSCEOLA 1,283,850
23 DICKINSON 882,280
23 EMMET 987,850
25 KOSSUTH 2,617,500
22 WINNEBAGO 1,074,400
20 WORTH 772,200
22 MITCHELL 1,197,020
27 HOWARD 1,194,480
22 WINNESHIEK 1,454,640
30 ALLAMAKEE 1,237,200
32 SIOUX 4,589,720
28 OBRIEN 2,032,520
28 CLAY 1,868,160
22 PALOALTO 1,260,820
20 HANCOCK 1,192,800
25 CERRO GORDO 2,107,000
23 FLOYD 1,800,210
24 CHICKASAW 1,379,320
23 FAYETTE 1,898,190
27 CLAYTON 1,945,080
28 PLYMOUTH 4,712,680
28 CHEROKEE 2,946,160
26 BUENA VISTA 2,505,880
20 POCAHONTAS 1,743,200
30 HUMBOLDT 2,028,000
28 WRIGHT 2,502,360
22 FRANKLIN 2,096,380
23 BUTLER 2,138,080
31 BREMER 1,717,330
28 BLACK HAWK 2,376,640
25 BUCHANAN 1,942,750
27 DELAWARE 2,249,370
32 DUBUQUE 2,022,960
22 WOODBURY 3,406,700
26 IDA 2,115,740
30 SAC 3,385,300
30 CALHOUN 2,973,600
31 WEBSTER 3,148,360
28 HAMILTON 2,641,240
24 HARDIN 2,250,480
25 GRUNDY 2,247,750
33 JACKSON 2,233,440
28 MONONA 3,391,080
31 CRAWFORD 4,187,170
32 CARROLL 3,218,140
30 GREENE 2,976,300
29 BOONE 2,760,800
30 STORY 3,141,300
30 MARSHALL 2,946,900
31 TAMA 3,399,150
30 BENTON 3,68.,100
30 LINN 3,851,500
33 JONES 2,403,720
35 CLINTON 3,964,100
31 HARRISON 3,941,650
31 SHELBY 3,676,600
31 AUDUBON 2,777,600
31 GUTHRIE 2,428,800
32 DALLAS 3,523,520
32 POLK 3,014,720
30 JASPER 3,520,200
32 POWESHIEK 3,135,040
32 IOWA 2,933,440
33 JOHNSON 3,415,170
33 CEDAR 3,211,290
32 SCOTT 2,464,320
32 MUSCATINE 2,069,120
32 POTTAWATTAMIE 5,918,080
30 CASS 3,138,600
32 ADAIR 2,938,560
33 MADISON 2,533,710
30 WARREN 2,364,600
33 MARION 3,098,590
32 MAHASKA 2,691,680
35 KEOKUK 3,106,250
32 WASHINGTON 2,681,280
33 LOUISA 2,017,950
30 MILLS 2,635,800
35 MONTGOMERY 3,204,250
35 ADAMS 2,560,250
35 UNION 1,802,200
35 CLARKE 1,864,100
33 LUCAS 1,522,620
30 MONROE 1,086,600
30 WAPELLO 1,531,500
35 JEFFERSON 2,005,850
34 HENRY 2,428,620
35 DES MOINES
33 FREMONT 3,929,470
34 PAGE 3,561,840
33 TAYLOR 2,549,910
33 RINGGOLD 2,091,210
34 DECATUR 1,913,280
33 WAYNE 2,349,600
28 APPANOOSE 1,498,280
33 DAVIS 1,554,960
32 VAN BUREN 1,555,520
35 LEE 1,829,450


OATS
1907 Crop
Counties Show Total Yield and Average per Acre
21 LYON 1,776,050
28 OSCEOLA 1,967,560
25 DICKINSON 1,051,750
26 EMMET 1,223,460
23 KOSSUTH 2,654,660
25 WINNEBAGO 1,058,000
21 WORTH 1,248,030
25 MITCHELL 1,772,750
22 HOWARD 1,125,520
20 WINNESHIEK 1,423,400
25 ALLAMAKEE 1,741,000
30 SIOUX 2,274,400
25 OBRIEN 1,541,250
30 CLAY 1,975,200
23 PALOALTO 1,310,080
21 HANCOCK 1,694,700
23 CERRO GORDO 1,734,430
24 FLOYD 1,730880
23 CHICKASAW 1,439,030
21 FAYETTE 1,375,710
23 CLAYTON 1,341,360
25 PLYMOUTH 2,060,500
28 CHEROKEE 1,946,160
30 BUENA VISTA 2,335,300
22 POCAHONTAS 1,730,740
31 HUMBOLDT 1,709,030
25 WRIGHT 1979,500
26 FRANKLIN 1,964,820
22 BUTLER 1,545,500
28 BREMER 1,420,160
Northern Section 24.7 Bu.
24 WOODBURY 1,350,240
25 IDA 968,500
26 SAC 1,640,340
31 CALHOUN 2,198,520
26 WEBSTER 2,040,740
25 HAMILTON 1,555,250
23 HARDIN 1,408,750
24 GRUNDY 1,590960
26 BLACK HAWK 1,382,420
20 BUCHANAN 1,011,800
22 DELAWARE 882,640
22 DUBUQUE 995,720
30 MONONA 858,600
26 CRAWFORD 1,531,660
25 CARROLL 1,439,500
26 GREENE 1,288,560
24 BOONE 1,275,360
22 STORY 1,102,640
31 MARSHALL 1,677,410
26 TAMA 1,421,680
26 BENTON 1,842,880
24 LINN 1,166,160
26 JONES 750,100
24 JACKSON 761,520
24 CLINTON 948,960
24 HARRISON 588,240
25 SHELBY 1,088,250
21 AUDUBON 749,280
26 GUTHRIE 868,660
22 DALLAS 985040
23 POLK 946220
23 JASPER 1,188,870
25 POWESHIEK 1,006,250
23 IOWA 917,200
26 JOHNSON 1,231,100
25 CEDAR 804,500
21 SCOTT 509,880
22 MUSCATINE 455,180
Central Section Average per Acre 24.6 Bu.
20 POTTAWATTAMIE 904,800
21 CASS 857,010
26 ADAIR 901,420
22 MADISON 517,440
18 WARREN 455,040
20 MARION 565,200
20 MAHASKA 648,600
26 KEOKUK 917,020
23 WASHINGTON 928,970
25 LOUISA 569,000
24 MILLS 374,880
23 MONTGOMERY 415,610
24 ADAMS 513,560
26 UNION 423,540
29 CLARKE 470,670
23 LUCAS 303,140
19 MONROE 177,460
22 WAPELLO 389,180
25 JEFFERSON 560,250
21 HENRY 596,610
23 DES MOINES 566,500
23 FREMONT 345,690
22 PAGE 431,860
23 TAYLOR 280,830
25 RINGGOLD 495,500
27 DECATUR 437,670
25 WAYNE 563,500
24 APPANOOSE 490,800
25 DAVIS 473,000
22 VAN BUREN 414,260
28 LEE 400880
Southern Section 23.4 Bu.
Farm Value Dec. 1, 1907 39¢ per Bu. Total $43,364,256.00
Total Yield for State 111,190,400. Bu.
Average per Acre 24.5 Bushels



SPRING WHEAT

1907 Crop

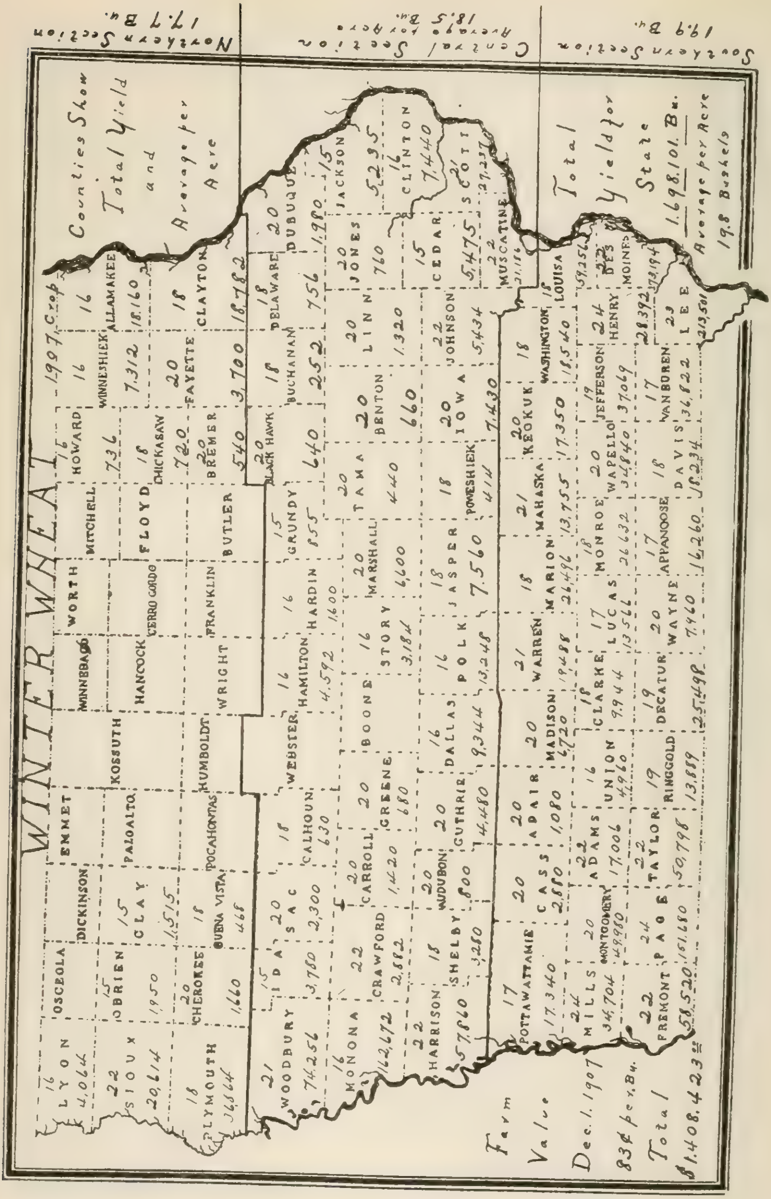
Counties Show Total Yield and Average per Acre.

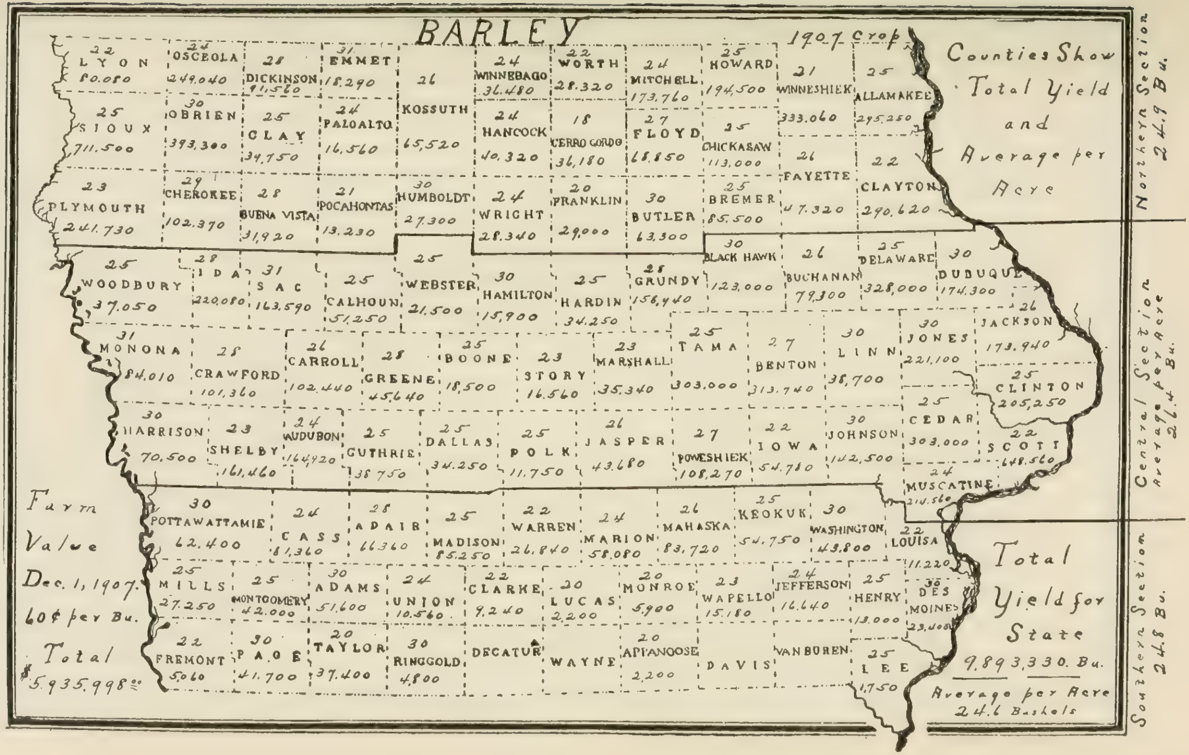
Total Yield for State 4,402,320 Bu.

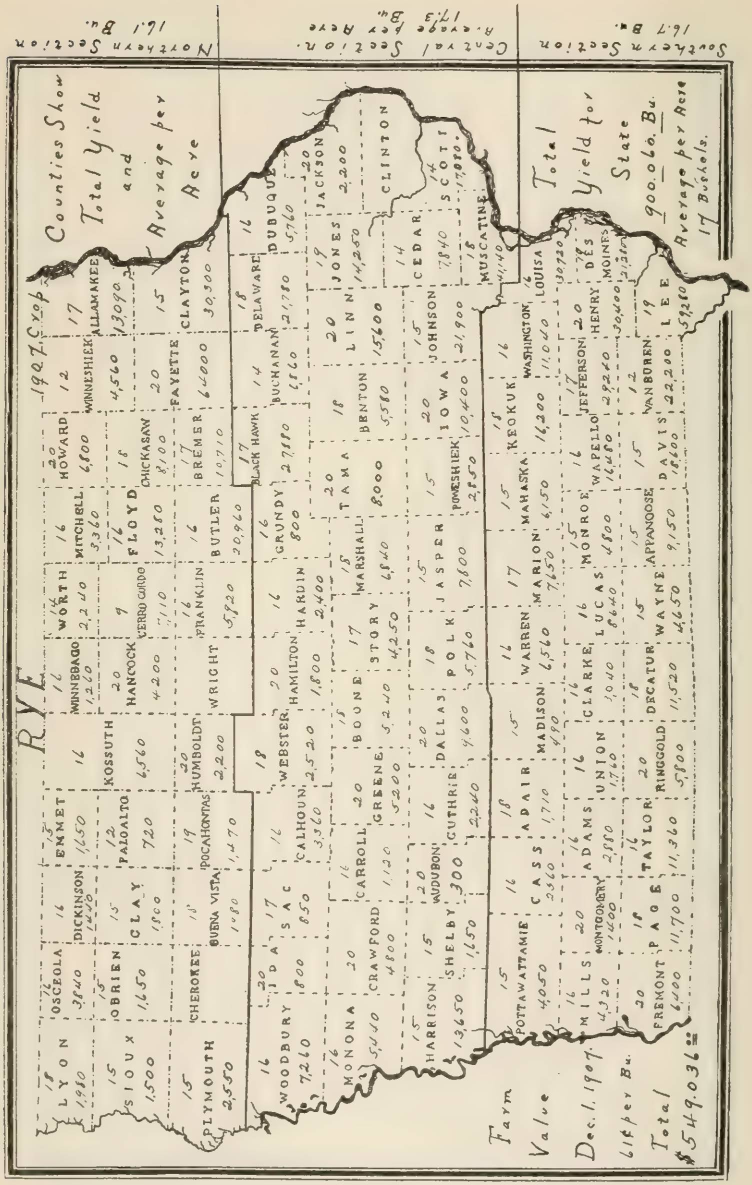
Average per Acre 13 Bushels.

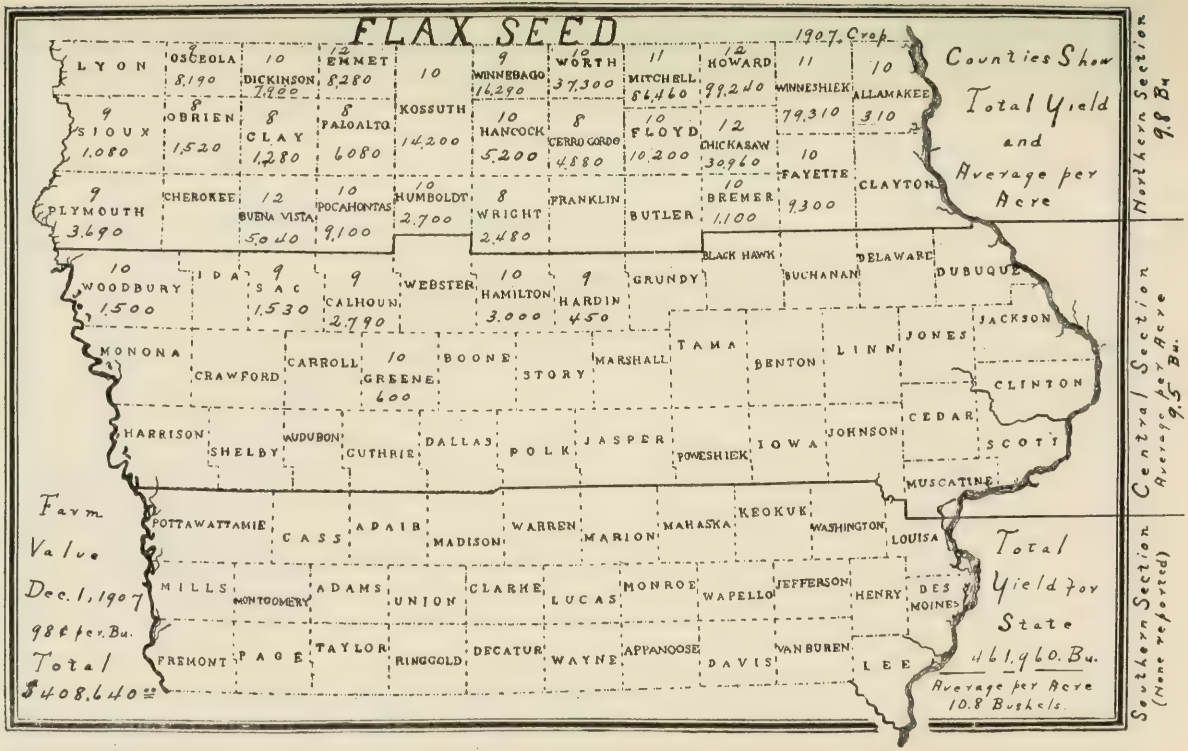
Farm Value Dec. 1, 1907 81¢ per Bu. Total $3,565,879.00

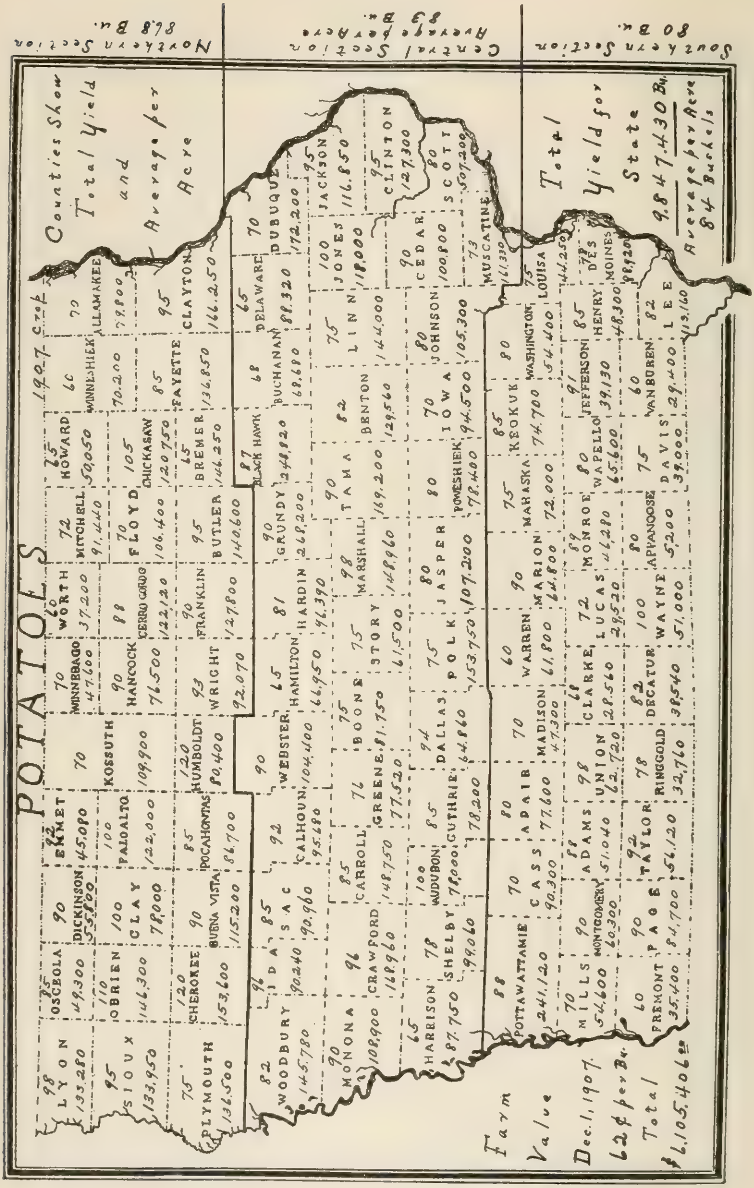
Northern Section 12.8 Bu.
Central Section Average per Acre 13.2 Bu.
Southern Section 13.2 Bu.
14 LYON 119,000
12 OSCEOLA 240.840
14 DICKINSON 14,840
12 EMMET 11,360
12 KOSSUTH 50,620
12 WINNEBAGO 48,960
15 WORTH 26,400
12 MITCHELL 7,440
12 HOWARD 11360
13 WINNESHIEK 41,210
10 ALLAMAKEE 6,700
14 SIOUX 449680
10 OBRIEN 30,500
12 CLAY 13,440
15 PALOALTO 10,800
10 HANCOCK 18,100
10 CERRO GORDO 4,300
12 FLOYD 2160
15 CHICKASAW 8400
14 FAYETTE 11,340
12 CLAYTON 15,360
11 PLYMOUTH 484,550
14 CHEROKEE 50,540
12 BUENA VISTA 15,840
12 POCAHONTAS 6,120
14 HUMBOLDT 42,700
13 WRIGHT 43,420
12 FRANKLIN 19,230
14 BUTLER 2,940
BREMER
12 BLACK HAWK 1,680
15 BUCHANAN 1650
15 DELAWARE 2,550
12 DUBUQUE 12,600
12 WOODBURY 185,760
13 IDA 83,070
12 SAC 36,720
12 CALHOUN 8,520
15 WEBSTER 48600
15 HAMILTON 29,110
13 HARDIN 32,110
12 GRUNDY 10,560
12 TAMA 30,240
14 BENTON 6,440
13 LINN 9490
14 JONES 4,900
12 JACKSON 14,760
14 CLINTON 17920
11 MONONA 111,760
15 CRAWFORD 289,650
12 CARROLL 88,920
13 GREENE 4,550
10 BOONE 16,300
12 STORY 7,440
15 MARSHALL 34,650
12 HARRISON 278,520
12 SHELBY 182,880
12 AUDUBON 70,310
12 GUTHRIE 33,840
12 DALLAS 15,480
13 POLK 13,520
14 JASPER 56,280
15 POWESHIEK 17,100
18 IOWA 19,260
15 JOHNSON 12,450
14 CEDAR 14,580
13 SCOTT 28730
15 MUSCATINE 12,300
11 POTTAWATTAMIE 211,310
12 CASS 103,320
12 ADAIR 30,480
15 MADISON 14,100
14 WARREN 13,860
14 MARION 33320
14 MAHASKA 12,460
15 KEOKUK 9600
12 WASHINGTON 2,760
LOUISA 1,120
13 MILLS 63,050
14 MONTGOMERY 131,840
16 ADAMS 20,260
12 UNION 1,080
CLARKE
15 LUCAS 750
15 MONROE 600
12 WAPELLO 960
15 JEFFERSON 1,560
HENRY
DES MOINES
12 FREMONT 38,760
12 PAGE 54720
11 TAYLOR 2,090
16 RINGGOLD 640
DECATUR
WAYNE
14 APPANOOSE 280
DAVIS
VAN BUREN
LEE

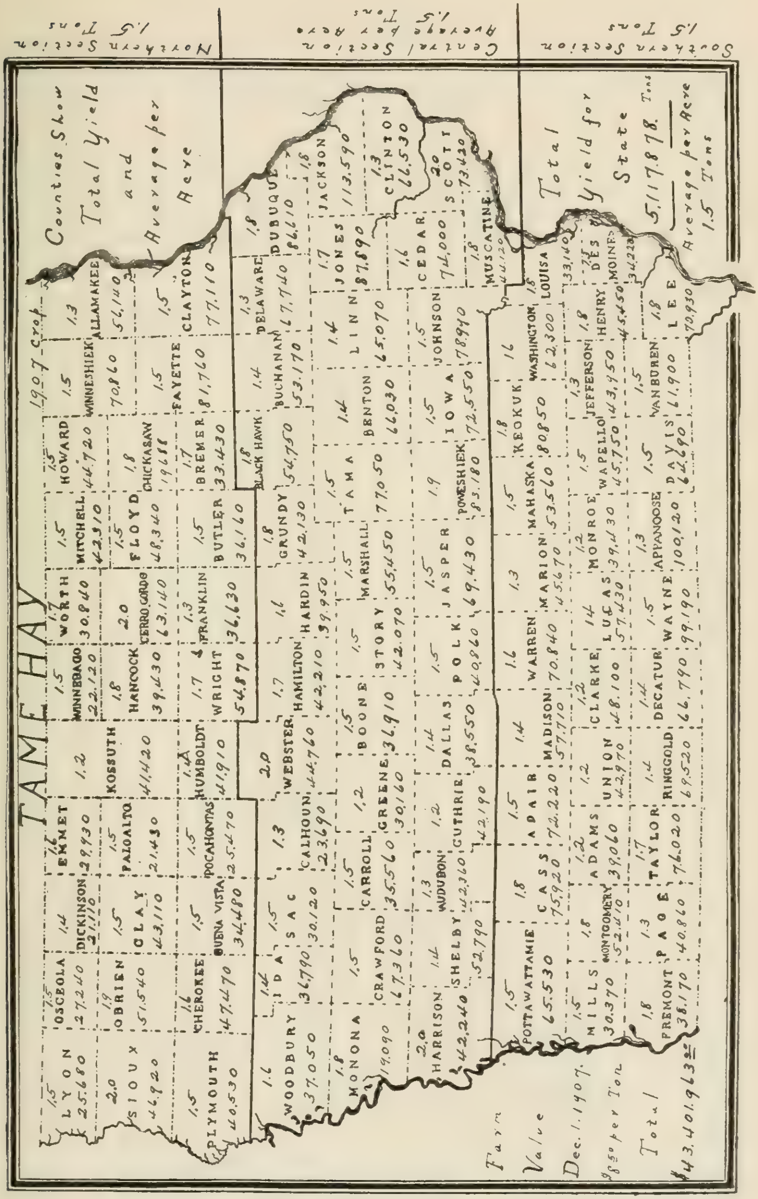

WINTER WHEAT
Counties Show Total Yield and Average per Acre
1907 Crop
Northern Section 17.7 Bu.
Central Section Average per Acre 18.5 Bu.
Southern Section 19.9 Bu.
Total Yield for State 1,698,101 Bu.
Average per Acre 19.8 Bushels
Farm Value Dec. 1, 1907 83¢ per Bu.
Total $1,408,423.00
LYON 16 4,064
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD 16 736
WINNESHIEK 16 7,312
ALLAMAKEE 16 18,160
SIOUX 22 20,614
O'BRIEN 15 1,950
CLAY 15 1,515
PALO ALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW 18 720
FAYETTE 20 3,700
CLAYTON 18 18,782
PLYMOUTH 18 36,864
CHEROKEE 20 1,660
BUENA VISTA 18 468
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER 20 540
BLACK HAWK 20 640
BUCHANAN 18 252
DELAWARE 18 756
DUBUQUE 20 1,980
WOODBURY 21 74,256
IDA 15 3,780
SAC 20 2,300
CALHOUN 18 630
WEBSTER
HAMILTON 16 4,592
HARDIN 16 1,600
GRUNDY 15 855
TAMA 20 440
BENTON 20 660
LINN 20 1,320
JONES 20 760
JACKSON 15 5,295
CLINTON 16 7,440
MONONA 16 162,672
CRAWFORD 22 2,882
CARROLL 20 1,420
GREENE 20 680
BOONE 16
STORY 16 3,184
MARSHALL 20 6,600
CEDAR 15 5,475
SCOTT 21 27,251
HARRISON 22 57,860
SHELBY 18 3,250
AUDUBON 20 800
GUTHRIE 20 4,480
DALLAS 16 9,344
POLK 16 13,248
JASPER 18 7,560
POWESHIEK 18 414
IOWA 20 7,430
JOHNSON 22 5,434
MUSCATINE 22 21,116
POTTAWATTAMIE 17 17,340
CASS 20 2,880
ADAIR 20 1,080
MADISON 20 4,720
WARREN 21 19,488
MARION 18 26,496
MAHASKA 21 13,755
KEOKUK 20 17,350
WASHINGTON 18 15,540
LOUISA 19 59,256
MILLS 24 34,704
MONTGOMERY 20 49,980
ADAMS 22 17,006
UNION 16 4,960
CLARKE 18 9,944
LUCAS 17 13,566
MONROE 18 26,632
WAPELLO 20 34,840
JEFFERSON 19 37,069
HENRY 24 28,392
DES MOINES 22 173,194
FREMONT 22 58,520
PAGE 24 151,680
TAYLOR 22 50,798
RINGGOLD 19 13,889
DECATUR 19 25,498
WAYNE 20 7,460
APPANOOSE 17 16,260
DAVIS 18 18,234
VAN BUREN 17 36,822
LEE 23 213,501

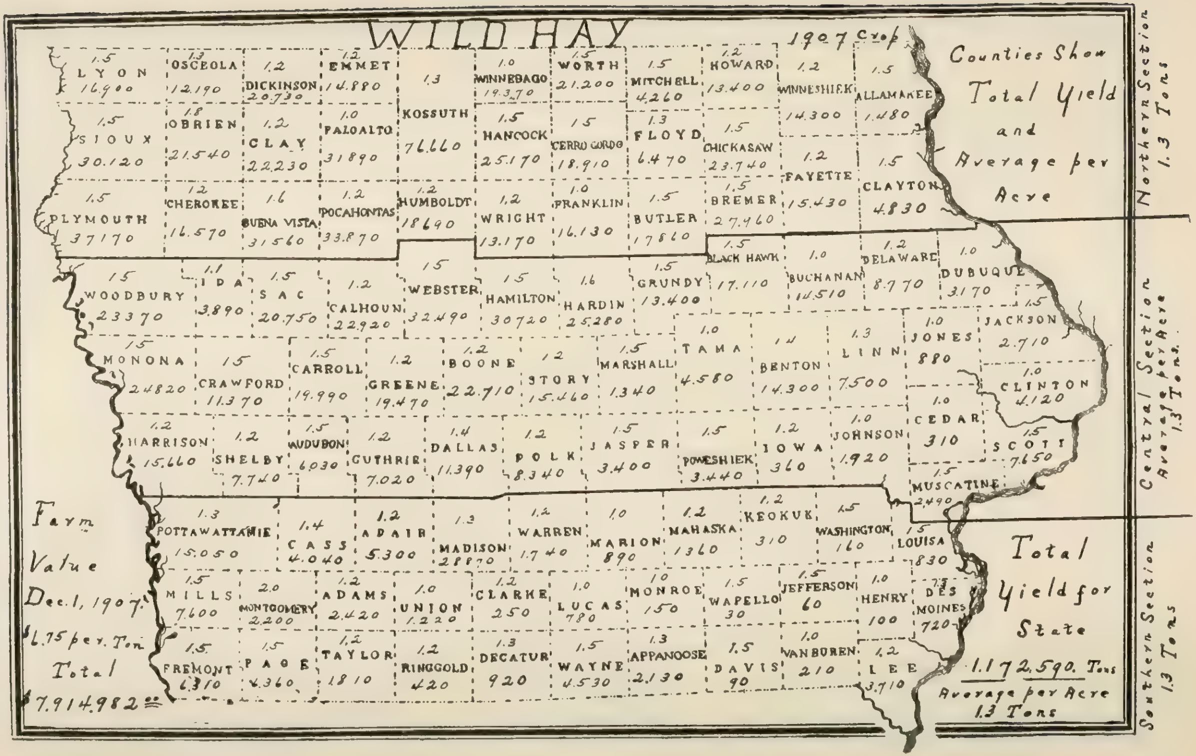

BARLEY
1907 Crop
Counties Show Total Yield and Average per Acre
Northern Section 24.9 Bu.
Central Section Average per Acre 24.4 Bu.
Southern Section 24.8 Bu.
22 LYON 80.080
24 OSCEOLA 249.040
28 DICKINSON 91.560
31 EMMET 18.290
26 KOSSUTH 65.520
24 WINNEBAGO 36.480
22 WORTH 28.320
24 MITCHELL 173.760
25 HOWARD 194.500
21 WINNESHIEK 333.060
25 ALLAMAKEE 295.250
25 SIOUX 711.500
30 OBRIEN 393.300
25 CLAY 34.750
24 PALOALTO 16.560
24 HANCOCK 40.320
18 CERRO GORDO 36.180
27 FLOYD 68.850
25 CHICKASAW 113.000
26 FAYETTE 47.320
22 CLAYTON 290.620
23 PLYMOUTH 241.730
29 CHEROKEE 102.370
28 BUENA VISTA 31.920
21 POCAHONTAS 13.230
30 HUMBOLDT 27.300
24 WRIGHT 28.340
20 FRANKLIN 29.000
30 BUTLER 63.300
25 BREMER 85.500
30 BLACK HAWK 123.000
26 BUCHANAN 79.300
25 DELAWARE 328.000
30 DUBUQUE 174.300
25 WOODBURY 37.050
28 IDA 220.080
31 SAC 163.590
25 CALHOUN 51.250
25 WEBSTER 21.500
30 HAMILTON 15.900
25 HARDIN 34.250
28 GRUNDY 156.940
26 JACKSON 173.940
31 MONONA 84.010
28 CRAWFORD 101.360
26 CARROLL 102.440
28 GREENE 45.640
25 BOONE 18.500
23 STORY 16.560
23 MARSHALL 35.340
25 TAMA 303.000
27 BENTON 313.740
30 LINN 38.700
30 JONES 221.100
25 CLINTON 205.250
30 HARRISON 70.500
23 SHELBY 161.460
24 AUDUBON 164.920
25 GUTHRIE 38.750
25 DALLAS 34.250
25 POLK 11.750
26 JASPER 43.680
27 POWESHIEK 108.270
22 IOWA 54.780
30 JOHNSON 142.500
25 CEDAR 303.000
22 SCOTT 148.560
24 MUSCATINE 214.560
30 POTTAWATTAMIE 62.400
24 CASS 81.360
28 ADAIR 66.360
25 MADISON 85.250
22 WARREN 26.840
24 MARION 58.080
26 MAHASKA 83.720
25 KEOKUK 54.750
30 WASHINGTON 43.800
22 LOUISA 11.220
25 MILLS 27.250
25 MONTGOMERY 42.000
30 ADAMS 51.600
24 UNION 10.560
22 CLARKE 9.240
20 LUCAS 2.200
20 MONROE 5.900
23 WAPELLO 15.180
24 JEFFERSON 16.640
25 HENRY 13.000
30 DES MOINES 23.400
22 FREMONT 5.060
30 PAGE 41.700
20 TAYLOR 37.400
30 RINGGOLD 4.800
DECATUR
WAYNE
20 APPANOOSE 2.200
DAVIS
VAN BUREN
25 LEE 1.750
Farm Value Dec. 1, 1907. 60¢ per Bu.
Total $5.935.998.00
Total Yield for State 9.893.330. Bu.
Average per Acre 24.6 Bushels


Northern Section 16.1 Bu.
Central Section. Average per Acre 17.3 Bu.
Southern Section 16.7 Bu.
RYE
1907 Crop
Counties Show Total Yield and Average per Acre
Total Yield for State 900.060. Bu.
Average per Acre 17 Bushels.
Farm Value Dec. 1. 1907. 61¢ per Bu. Total $549.036.00
LYON 18 1,980
OSCEOLA 16 3,840
DICKINSON 16 1,440
EMMET 15 1,650
KOSSUTH 16 6,560
WINNEBAGO 16 1,260
WORTH 14 2,240
MITCHELL 16 3,360
HOWARD 20 6,800
WINNESHIEK 12 4,560
ALLAMAKEE 17 13,090
SIOUX 15 1,500
OBRIEN 15 1,650
CLAY 15 1,500
PALOALTO 12 720
HANCOCK 20 4,200
CERRO GORDO 9 7,110
FLOYD 16 13,280
CHICKASAW 18 8,100
FAYETTE 20 64,000
CLAYTON 15 30,300
PLYMOUTH 15 2,550
CHEROKEE 15
BUENA VISTA 15 1,080
POCAHONTAS 19 1,470
HUMBOLDT 20 2,200
WRIGHT
FRANKLIN 16 5,920
BUTLER 16 20,960
BREMER 17 10,710
BLACK HAWK 17 27,180
BUCHANAN 14 4,560
DELAWARE 18 21,780
DUBUQUE 16 5,760
JACKSON 20 2,200
WOODBURY 16 7,260
IDA 20 800
SAC 17 850
CALHOUN 16 3,360
WEBSTER 18 2,520
HAMILTON 20 1,800
HARDIN 16 2,400
GRUNDY 16 800
TAMA 20 8,000
BENTON 18 5,580
LINN 20 15,600
JONES 19 14,250
CLINTON
MONONA 16 5,440
CRAWFORD 20 4,800
CARROLL 16 1,120
GREENE 20 5,200
BOONE 15 5,240
STORY 17 4,250
MARSHALL 18 6,840
JASPER 15 7,800
POWESHIEK 15 2,850
IOWA 20 10,400
JOHNSON 15 21,900
CEDAR 14 7,840
SCOTT 14 17,080
MUSCATINE 18 4,140
HARRISON 15 13,650
SHELBY 15 1,650
AUDUBON 20 300
GUTHRIE 16 2,240
DALLAS 20 4,600
POLK 18 5,760
WARREN 16 6,560
MARION 17 7,650
MAHASKA 15 6,150
KEOKUK 18 16,200
WASHINGTON 16 11,040
LOUISA 16 30,720
POTTAWATTAMIE 15 4,050
CASS 16 2,560
ADAIR 18 1,710
MADISON 15 490
MILLS 16 4,320
MONTGOMERY 20 1,400
ADAMS 16 2,880
UNION 16 1,760
CLARKE 16 3,040
LUCAS 16 8,640
MONROE 15 4,800
WAPELLO 16 16,480
JEFFERSON 17 29,240
HENRY 20 30,400
DES MOINES 18 21,380
FREMONT 20 6,400
PAGE 18 11,700
TAYLOR 16 11,360
RINGGOLD 20 5,800
DECATUR 18 11,520
WAYNE 15 4,650
APPANOOSE 15 9,150
DAVIS 15 18,600
VANBUREN 12 22,200
LEE 19 59,280


FLAX SEED
1907 Crop
Counties Show Total Yield and Average per Acre
Northern Section 9.8 Bu.
Central Section Average per Acre 9.5 Bu.
Southern Section (None reported)
LYON
9 OSCEOLA 8,190
10 DICKINSON 7,900
12 EMMET 8,280
10 KOSSUTH 14,200
9 WINNEBAGO 16,290
10 WORTH 37,300
11 MITCHELL 86,460
12 HOWARD 99,240
11 WINNESHIEK 79,310
10 ALLAMAKEE 310
9 SIOUX 1,080
8 OBRIEN 1,520
8 CLAY 1,280
8 PALOALTO 6080
10 HANCOCK 5,200
8 CERRO GORDO 4,880
10 FLOYD 10,200
12 CHICKASAW 30,960
10 FAYETTE 9,300
CLAYTON
9 PLYMOUTH 3,690
CHEROKEE
12 BUENA VISTA 5,040
10 POCAHONTAS 9,100
10 HUMBOLDT 2,700
8 WRIGHT 2,480
FRANKLIN
BUTLER
10 BREMER 1,100
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
10 WOODBURY 1,500
IDA
9 SAC 1,530
9 CALHOUN 2,790
WEBSTER
10 HAMILTON 3,000
9 HARDIN 450
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
MONONA
CRAWFORD
CARROLL
10 GREENE 600
BOONE
STORY
MARSHALL
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE
Farm Value Dec. 1, 1907 98¢ per Bu. Total $408,640.00
Total Yield for State 461,960. Bu.
Average per Acre 10.8 Bushels.


Northern Section 86.8 Bu.
Central Section Average per Acre 83 Bu.
Southern Section 80 Bu.
POTATOES
1907 Crop
Counties Show Total Yield and Average per Acre
Total Yield for State 9,847,430 Bu.
Average per Acre 84 Bushels
Farm Value Dec. 1, 1907. 62¢ per Bu.
Total $6,105,406.00
LYON 98 135,280
OSCEOLA 75 49,300
DICKINSON 90 55,800
EMMET 82 45,080
KOSSUTH 70 109,900
WINNEBAGO 70 47,600
WORTH 60 37,200
MITCHELL 72 91,440
HOWARD 65 50,050
WINNESHIEK 60 70,200
ALLAMAKEE 70 79,800
SIOUX 95 133,950
OBRIEN 110 146,300
CLAY 100 78,000
PALOALTO 100 122,000
HANCOCK 90 76,500
CERRO GORDO 88 122,120
FLOYD 70 106,400
CHICKASAW 105 120,750
FAYETTE 85 136,850
CLAYTON 95 166,250
PLYMOUTH 75 136,500
CHEROKEE 120 153,600
BUENA VISTA 90 115,200
POCAHONTAS 85 86,700
HUMBOLDT 120 80,400
WRIGHT 93 92,070
FRANKLIN 90 127,800
BUTLER 95 140,600
BREMER 65 146,250
BLACK HAWK 87 248,820
BUCHANAN 68 68,680
DELAWARE 65 88,320
DUBUQUE 70 172,200
WOODBURY 82 145,780
IDA 96 90,240
SAC 85 90,960
CALHOUN 92 95,680
WEBSTER 90 104,400
HAMILTON 65 66,950
HARDIN 81 96,390
GRUNDY 90 248,200
MONONA 90 108,900
CRAWFORD 96 168,960
CARROLL 85 148,750
GREENE 76 77,520
BOONE 75 81,750
STORY 75 61,500
MARSHALL 98 148,960
TAMA 90 169,200
BENTON 82 129,560
LINN 75 144,000
JONES 100 118,000
JACKSON 95 116,850
CLINTON 95 127,300
HARRISON 65 87,750
SHELBY 78 99,060
AUDUBON 100 78,000
GUTHRIE 85 78,200
DALLAS 94 64,860
POLK 75 153,750
JASPER 80 107,200
POWESHIEK 80 78,400
IOWA 70 94,500
JOHNSON 80 105,300
CEDAR 90 100,800
SCOTT 80 507,200
MUSCATINE 73 161,330
POTTAWATTAMIE 88 241,120
CASS 70 90,300
ADAIR 80 77,600
MADISON 70 47,300
WARREN 60 61,800
MARION 90 64,800
MAHASKA 75 72,000
KEOKUK 85 74,700
WASHINGTON 80 54,400
LOUISA 75 44,250
MILLS 70 54,600
MONTGOMERY 90 60,300
ADAMS 88 51,040
UNION 98 62,720
CLARKE 68 28,560
LUCAS 72 29,520
MONROE 89 46,280
WAPELLO 80 65,600
JEFFERSON 91 39,130
HENRY 85 48,300
DES MOINES 78 98,920
FREMONT 60 35,400
PAGE 90 84,700
TAYLOR 92 56,120
RINGGOLD 78 32,760
DECATUR 82 38,540
WAYNE 100 51,000
APPANOOSE 80 5,200
DAVIS 75 39,000
VAN BUREN 60 29,400
LEE 82 119,160


TAME HAY
1907 Crop
Counties Show Total Yield and Average per Acre
Northern Section 1.5 Tons
Central Section Average per Acre 1.5 Tons
Southern Section 1.5 Tons
1.5 LYON 25,680
1.5 OSCEOLA 27,240
1.4 DICKINSON 21,110
1.6 EMMET 29,930
1.2 KOSSUTH 41,420
1.5 WINNEBAGO 22,120
1.7 WORTH 30,840
1.5 MITCHELL 42,910
1.5 HOWARD 44,720
1.5 WINNESHIEK 70,860
1.3 ALLAMAKEE 56,140
2.0 SIOUX 44,920
1.9 OBRIEN 51,540
1.5 CLAY 43,110
1.5 PALO ALTO 21,430
1.8 HANCOCK 39,430
2.0 CERRO GORDO 63,140
1.5 FLOYD 48,340
1.8 CHICKASAW 19,655
1.5 FAYETTE 81,760
1.5 CLAYTON 77,110
1.5 PLYMOUTH 40,530
1.6 CHEROKEE 47,470
1.5 BUENA VISTA 34,480
1.5 POCAHONTAS 25,470
1.4 HUMBOLDT 41,910
1.7 WRIGHT 54,870
1.3 FRANKLIN 36,630
1.5 BUTLER 36,160
1.7 BREMER 33,430
1.8 BLACK HAWK 54,750
1.4 BUCHANAN 53,170
1.3 DELAWARE 67,740
1.8 DUBUQUE 86,610
1.6 WOODBURY 37,050
1.4 IDA 36,790
1.5 SAC 30,120
1.3 CALHOUN 23,690
2.0 WEBSTER 44,760
1.7 HAMILTON 42,210
1.6 HARDIN 39,950
1.8 GRUNDY 42,130
1.5 TAMA 77,050
1.4 BENTON 66,030
1.4 LINN 65,070
1.7 JONES 87,890
1.8 JACKSON 113,590
1.3 CLINTON 66,530
1.8 MONONA 19,090
1.5 CRAWFORD 67,360
1.5 CARROLL 35,560
1.2 GREENE 30,160
1.5 BOONE 36,910
1.5 STORY 42,070
1.5 MARSHALL 55,450
1.9 POWESHIEK 85,180
1.5 IOWA 72,550
1.5 JOHNSON 78,940
1.6 CEDAR 74,000
2.0 SCOTT 73,420
1.8 MUSCATINE 44,120
2.0 HARRISON 42,240
1.4 SHELBY 52,790
1.3 AUDUBON 42,360
1.2 GUTHRIE 42,190
1.4 DALLAS 38,550
1.5 POLK 40,960
1.5 JASPER 69,430
1.5 POTTAWATTAMIE 65,530
1.8 CASS 75,920
1.5 ADAIR 72,220
1.4 MADISON 57,710
1.6 WARREN 70,840
1.3 MARION 45,670
1.5 MAHASKA 53,560
1.8 KEOKUK 80,850
1.6 WASHINGTON 62,300
1.5 LOUISA 33,140
1.5 MILLS 30,370
1.8 MONTGOMERY 52,410
1.2 ADAMS 39,060
1.2 UNION 42,970
1.2 CLARKE 48,100
1.4 LUCAS 57,430
1.2 MONROE 39,430
1.5 WAPELLO 45,750
1.3 JEFFERSON 43,950
1.8 HENRY 45,450
1.5 DES MOINES 34,220
1.8 FREMONT 38,170
1.3 PAGE 40,860
1.7 TAYLOR 76,020
1.4 RINGGOLD 69,520
1.4 DECATUR 66,790
1.5 WAYNE 99,190
1.3 APPANOOSE 100,120
1.5 DAVIS 62,290
1.5 VAN BUREN 61,900
1.8 LEE 70,930
Total Yield for State 5,117,878. Tons
Average per Acre 1.5 Tons
Farm Value Dec. 1, 1907. $8.50 per Ton
Total $43,401,963.00


WILD HAY
1907 Crop
Counties Show Total Yield and Average per Acre
Northern Section 1.3 Tons
Central Section Average per Acre 1.3 Tons.
Southern Section 1.3 Tons
Total Yield for State 1.172.590. Tons
Average per Acre 1.3 Tons
Farm Value Dec. 1, 1907. $1.75 per. Ton
Total $7.914.982.00
1.5 LYON 16.900
1.3 OSCEOLA 12.190
1.2 DICKINSON 20.730
1.2 EMMET 14.880
1.3 KOSSUTH 76.660
1.0 WINNEBAGO 19.370
1.5 WORTH 21.200
1.5 MITCHELL 4.260
1.2 HOWARD 13.400
1.2 WINNESHIEK 14.300
1.5 ALLAMAKEE 1.480
1.5 SIOUX 30.120
1.8 OBRIEN 21.540
1.2 CLAY 22.230
1.0 PALOALTO 31890
1.5 HANCOCK 25.170
1.5 CERRO GORDO 18.910
1.3 FLOYD 6.470
1.5 CHICKASAW 23.740
1.2 FAYETTE 15.430
1.5 CLAYTON 4.830
1.5 PLYMOUTH 37170
1.2 CHEROKEE 16.570
1.6 BUENA VISTA 31560
1.2 POCAHONTAS 33.870
1.2 HUMBOLDT 18690
1.2 WRIGHT 13.170
1.0 FRANKLIN 16.130
1.5 BUTLER 17860
1.5 BREMER 27.460
1.5 BLACK HAWK 17.110
1.0 BUCHANAN 14.510
1.2 DELAWARE 8.770
1.0 DUBUQUE 3170
1.5 WOODBURY 23370
1.1 IDA 3.890
1.5 SAC 20.750
1.2 CALHOUN 22.920
1.5 WEBSTER 32.490
1.5 HAMILTON 30720
1.6 HARDIN 25.280
1.5 GRUNDY 13.400
1.0 TAMA 4.580
1.4 BENTON 14.300
1.3 LINN 7.500
1.0 JONES 880
1.5 JACKSON 2.710
1.5 MONONA 24820
1.5 CRAWFORD 11.370
1.5 CARROLL 19.990
1.2 GREENE 19.470
1.2 BOONE 22.710
1.2 STORY 15.460
1.5 MARSHALL 1.340
1.0 CLINTON 4.120
1.2 HARRISON 15.660
1.2 SHELBY 7.740
1.5 AUDUBON 6030
1.2 GUTHRIE 7.020
1.4 DALLAS 11.390
1.2 POLK 8.340
1.5 JASPER 3.400
1.5 POWESHIEK 3.440
1.2 IOWA 360
1.0 JOHNSON 1.920
1.0 CEDAR 310
1.5 SCOTT 7.650
1.5 MUSCATINE 2.490
1.3 POTTAWATTAMIE 15.050
1.4 CASS 4.040
1.2 ADAIR 5.300
1.3 MADISON 28870
1.2 WARREN 1.740
1.0 MARION 890
1.2 MAHASKA 1360
1.2 KEOKUK 310
1.5 WASHINGTON 160
1.5 LOUISA 830
1.5 MILLS 7.600
2.0 MONTGOMERY 2.200
1.2 ADAMS 2.420
1.0 UNION 1.220
1.2 CLARKE 250
1.0 LUCAS 780
1.0 MONROE 150
1.5 WAPELLO 30
1.5 JEFFERSON 60
1.0 HENRY 100
1.3 DES MOINES 720
1.5 FREMONT 6.310
1.5 PAGE 4.360
1.2 TAYLOR 1810
1.2 RINGGOLD 420
1.3 DECATUR 920
1.5 WAYNE 4.530
1.3 APPANOOSE 2.130
1.5 DAVIS 90
1.0 VAN BUREN 210
1.2 LEE 3.710

PART II.

STATISTICAL TABLES
OF
Iowa's Principal Farm Crops.

CORN CROPS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	41	230,633,200	$.25	$57,658,300	5,625,200
1885	33	224,636,522	.23	51,666,400	6,803,834
1890	28	239,675,156	.41	98,266,814	8,559,827

CORN CROPS—1896-1907.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	39	312,692,210	$.14	$ 43,916,900	8,043,390
1897	29	239,452,150	.17	40,706,860	8,253,522
1898	34.5	289,214,850	.23	66,519,400	8,396,286
1899	36.3	306,852,710	.23	70,429,410	8,460,521
1900	40.3	345,055,040	.27	93,164,860	8,618,660
1901	26.2	227,908,850	.50	113,954,000	8,687,480
1902	34	296,950,230	.28	83,432,700	8,700,000
1903	31	230,511,310	.36	82,984,071	7,398,320
1904	36	323,853,330	.35	113,348,665	9,000,000
1905	37.2	345,871,840	.35	121,055,144	9,285,150
1906	41	388,836,252	.33	128,155,143	9,443,960
1907	29.6	246,898,460	.44	108,635,322	8,858,000
Average	34.6	296,174,769	$.30.4	88,858,539	8,595,440

OATS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	35	42,288,800	$.23	$ 9,496,424	1,179,680
1885	32.5	71,737,900	.21	15,064,959	2,207,320
1890	29	80,002,735	.38	30,401,039	2,758,715

OATS—1896-1907.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	26	73,450,000	$.12	$ 8,814,000	2,825,000
1897	30	132,517,150	.16	21,211,380	4,405,782
1898	32	139,915,340	.21	29,383,220	4,299,243
1899	34.5	140,647,300	.19	26,722,980	4,069,557
1900	35	138,832,300	.20	27,766,460	3,991,690
*1901	32	114,883,000	.35	40,209,230	3,799,220
1902	31	92,907,900	.24	22,297,000	3,770,624
**1903	25.9	99,012,660	.30	29,703,798	3,822,822
1904	29.4	118,435,570	.26	30,793,284	4,018,980
1905	33.8	146,439,240	.25	36,609,810	4,177,545
1906	34	142,036,530	.27	38,349,878	4,166,800
1907	24.5	111,190,400	.39	43,364,256	4,536,170
Average	30.7	120,855,616	24.5	$29,602,108	3,990,286

*Short corn crop.
**Excessive moisture.

WHEAT—1880, 1885, 1900.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre Spring wheat	Average yield per acre Winter wheat	Total yield Spring wheat	Total yield Winter wheat	Total yield All wheat	Average farm price December 1	Total farm value December 1	Acreage
1880	10.5	-----	------------	----------	36,099,760	$.82	$29,501,803	3,437,948
1885	12.	-----	------------	----------	31,776,108	.61	19,383,426	2,648,009
1890	11.7	-----	------------	----------	25,114,552	.78	19,589,350	2,092,896

WHEAT—1896-1907.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre Spring wheat	Average yield per acre Winter wheat	Total yield Spring wheat	Total yield Winter wheat	Total yield All wheat	Average farm price December 1	Total farm value December 1	Acreage
1896	13.	17	7,047,235	3,351,550	10,398,785	$.57	$ 6.020,000	739,245
1897	13.4	13	12,941,600	1,671,454	14,613,054	.74	10,813,650	1,222,974
1898	14.8	16.5	19,152,352	3,168,916	22,321,268	.53	11,602,000	1,484,682
1899	12.7	11	19,574,792	226,040	19,900,830	.58	10,701,490	1,559,931
1900	14.3	13.3	20,280,280	1,018,070	21,288,350	.60	12,799,370	1,492,630
1901	15.3	17.6	17,429,230	865,770	18,295,000	.60	10,965,000	1,188,239
1902	13.	18.	12,680,800	825,045	13,532,845	.53	7,062,640	1,021,281
1903	12.6	16.9	9,481,350	1,435,380	10,916,730	.67	7,167,643	837,422
1904	9.1	14.3	7,080,430	1,017,000	8,097,430	.89	7,044,809	846,070
1905	14.4	20.2	5,155,760	1,253,020	6,408,780	.72	4,614,321	420,068
1906	15.	23.	5,603,880	1,566,050	7,169,930	.64	4,579,697	443,810
1907	13.	19.8	4,402,320	1,698,101	6,100,421	.82	4,974,302	424,407
Average	13.4	16.7	11,735,836	1,508,031	13,254,452	$.66	$ 8,195,410	973,448

BARLEY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	23	4,600,000	$.42	$1,932,000	200,000
1885	27	5,737,095	.33	1,893,241	212,485
1890	24	3,664,368	.47	1,722,254	152,682

BARLEY—1896-1907.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	29	15,881,618	$.20	$3,176,320	547,642
1897	25	14,076,850	.23	3,237,670	551,867
1898	27.5	14,138,000	.30	4,209,740	509,589
1899	25.6	14,719,310	.30	4,415,570	557,598
1900	25.3	12,695,200	.33	4,189,410	501,740
1901	24.2	14,654,410	.44	6,447,940	604,610
1902	25	15,380,910	.33	5,075,710	594,070
1903	24.7	12,179,790	.37	4,506,522	493,108
1904	25	12,317,710	.34	4,188,021	493,370
1905	27.5	15,566,770	.33	5,137,034	565,700
1906	26.5	14,858,830	.36	5,349,178	558,870
1907	24.6	9,893,330	.60	5,935,998	397,210
Average	25.8	13,863,560	$.34	4,655,759	531,281

RYE—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	14	574,000	$.38	$218,120	41,000
1885	15	1,710,000	.42	718,200	114,000
1890	16	1,608,960	.51	820,570	100,560

RYE—1896-1907.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	16	1,891,716	$.25	$ 486,680	121,670
1897	15	3,490,344	.34	1,186,710	226,198
1898	16	3,370,550	.38	1,280,800	210,309
1899	16.3	2,061,160	.40	824,460	126,236
1900	15.6	1,621,130	.43	697,300	103,680
1901	15.8	859,630	.48	859,630	54,390
1902	17	882,830	.40	353,132	55,150
1903	15.6	1,923,060	.44	846,146	123,273
1904	15	1,517,090	.54	819,228	99,590
1905	18	1,283,500	.52	667,420	71,305
1906	17.5	1,093,160	.48	520,719	62,530
1907	17	900,060	.61	549,036	52,975
Average	16.2	1,741,186	$.44	757,605	108,942

HAY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield Tame Hay	Total yield Tons	Average yield Wild hay	Total yield Tons	Total yield all hay Tons	Average value per ton Tame hay	Average value per ton Wild hay	Total value all hay	Acreage
*1880	......	....	......	....	....	......	......	....	....
*1885	......	....	......	....	....	......	......	....	....
1890	1.5	4,991,335	......	....	....	6.84	......	34,140,731	3,327,557

*No authentic data obtainable.

HAY—1896-1907.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Tame Hay		Wild Hay		Total yield all hay Tons	Average value per ton Tame hay	Average value per ton Wild hay	Total value all hay	Acreage
	Average yield	Total yield Tons	Average yield	Total yield Tons					
1896	1.5	3,376,440	1.5	2,325,000	5,701,440	$4.50	$3.30	$22,782,000	3,800,960
1897	1.6	3,362,287	1.3	1,939,117	5,301,320	4,50	3.70	22,304,000	3,315,972
1898	1.7	3,852,561	1.2	1,645,419	5,498,080	4.30	3.50	22,281,000	4,104,967
1899	1.5	3,852,941	1.2	1,458,195	5,311,130	5.75	4.90	29,350,000	3,742,655
1900	1.4	3,609,010	1.	1,530,050	5,139,060	6.50	5.00	31,120,000	4,078,960
1901	1.4	3,711,680	1.2	1,268,700	4,980,380	8.25	6.30	38,712,000	3,608,450
1902	1.8	4,439,040	1.3	1,202,860	5,641,900	6.80	5.50	36,787,322	3,391,408
1903	1.9	5,216,404	1.3	1,191,345	6,407,749	5.75	4.95	35,891,480	3,651,894
1904	1.5	4,499,090	1.2	1,091,590	5,590,680	5.62	4.50	30,197,040	3,707,298
1905	1.8	6,477,300	1.2	1,313,310	7,790,610	5.50	4.50	41,535,045	4,692,925
1906	1.3	4,892,950	1.2	1,110,690	6,003,640	7.50	5.50	42,805,920	4,418,600
1907	1.5	5,117,878	1.3	1,172,590	6,290,468	8.50	6.75	51,316,945	4,268,730
Average	1.58	4,367,298	1.24	1,437,405	5,804,705	$6.12	$4.87	$33,756,896	3,898,568

FLAX—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	10	1,034,200	$1.00	$1,034,200	103,420
*1885	--------	-------------	.94	2,503,293	---------------
1890	10.5	2,929,081	1.10	3,276,989	283,722

*No other data.

FLAX—1896-1907.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	9.5	1,946,720	$ .95	$1,135,000	199,128
1897	10.	2,498,600	.87	2,173,782	249,882
1898	10.5	2,376,600	.80	1,901,280	225,014
1899	11.2	1,597,790	1.04	1,661,898	142,175
1900	11.7	1,222,980	1.50	1,834,470	108,850
1901	18.8	916,890	1.29	916,890	104,140
1902	8.	755,350	1.00	725,350	94,767
1903	8.7	355,160	.78	277,024	40,823
1904	11.	591,140	1.15	679,811	51,370
1905	9.8	173,770	.90	156,393	17,732
1906	10.7	205,280	.97	200,091	19,160
1907	10.8	461,960	.98	408,640	42,790
Average	10.1	1,091,853	$1.02	$1,005,886	107,986

POTATOES—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	95	10,165,000	$.35	$3,557,750	107,000
1885	82	12,874,000	.40	5,149,600	157,000
1890	49	8,332,352	.81	6,749,205	170,048

POTATOES—1896-1907.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Average
1896	87.	14,814,795	$.21	$2,962,950	170,285
1897	60.	10,051,910	.45	4,523,360	163,248
1898	76.	12,538,410	.31	3,826,900	164,456
1899	98.	15,252,934	.24	3,660,714	154,243
1900	78.	10,850,900	.40	4,340,360	149,680
*1901	37.4	5,098,460	.90	4,588,610	136,300
1902	91.	12,051,670	.34	4,095,650	138,484
**1903	53.8	6,082,694	.75	4,562,020	113,433
1904	125.	14,255,680	.28	3,991,590	113,250
1905	84.	9,352,190	.50	4,676,045	111,335
1906	101.	11,697,500	.48	5,614,800	115,310
1907	84.	9,847,430	.62	6,105,406	117,350
Average	81.	10,991,214	$.46	$4,412,367	137,281

*Very dry.
**Very wet.

STATISTICS OF THE PRINCIPAL CROPS.

Figures taken from the Year Book of the United States Department of Agriculture for 1906, and the Iowa Weather and Crop Service report for the same year.

CORN.

Acreage, production, value and distribution of corn in the United States, and amount shipped out of county where grown in 1906, by states.

State or Territory	Acreage—acres	Average yield per acre—bushels	Production	Average price December 1	Farm value December 1	Shipped out of county where grown
Maine	12,350	37.0	456,950	$.64	$ 292,448	4,570
New Hampshire	26,234	37.5	983,775	.64	692,616	0
Vermont	56,491	35.5	2,005,430	.59	1,183,204	0
Massachusetts	44,799	39.7	1,778,520	.60	1,067,112	0
Rhode Island	10,011	33.1	331,364	.64	212,073	3,314
Connecticut	55,595	40.0	2,223,800	.60	1,334,280	22,238
New York	650,000	34.9	22,685,000	.59	13,384,150	453,700
New Jersey	277,749	36.3	10,082,289	.53	5,343,613	1,512,343
Pennsylvania	1,441,797	40.2	57,960,239	.52	30,139,324	4,057,217
Delaware	196,472	30.0	5,894,160	.42	2,475,547	2,357,664
Maryland	628,795	35.0	22,007,825	.45	9,903,521	6,162,191
Virginia	1,859,610	24.3	45,188,523	.55	24,853,688	4,066,967
West Virginia	750,000	30.3	22,725,000	.55	12,498,750	1,136,250
North Carolina	2,731,820	15.3	41,796,846	.68	28,421,855	1,253,905
South Carolina	1,935,347	12.2	23,611,233	.73	17,236,200	472,225
Georgia	4,338,883	12.0	52,066,596	.67	34,884,619	1,561,998
Florida	625,000	11.0	6,875,000	.62	4,262,500	68,750
Ohio	3,325,000	42.6	141,645,000	.39	55,241,550	41,077,050
Indiana	4,643,782	39.6	183,893,767	.36	66,201,756	62,523,881
Illinois	9,616,886	36.1	347,169,585	.36	124,981,051	142,339,530
Michigan	1,475,000	37.0	54,575,000	.44	24,013,000	3,274,500
Wisconsin	1,458,877	41.2	60,105,732	.41	24,643,350	1,803,172
Minnesota	1,492,538	33.6	50,149,277	.34	17,050,754	6,017,913
Iowa	9,443,960	41.0	388,348,920	.33	128,155,143	97,051,500
Missouri	7,075,000	32.3	228,522,500	.38	86,838,550	29,707,925
North Dakota	150,000	27.8	4,170,000	.39	1,626,300	83,400
South Dakota	1,875,000	33.5	62,812,500	.29	18,215,625	12,562,500
Nebraska	7,325,000	34.1	249,782,500	.29	72,436,925	122,393,425
Kansas	6,750,000	28.9	195,075,000	.32	62,424,000	56,571,750
Kentucky	3,195,072	33.0	105,437,376	.42	44,283,698	12,652,485
Tennessee	3,075,762	28.1	86,428,912	.47	40,621,589	12,964,337
Alabama	2,990,587	16.0	47,849,392	.64	30,623,611	956,988
Mississippi	2,204,822	18.5	40,789,207	.61	24,881,416	815,784
Louisiana	1,524,281	17.2	26,217,633	.60	15,730,580	262,176
Texas	6,924,657	22.5	155,804,782	.50	77,902,391	6,232,191
Indian Territory	2,038,490	33.6	68,493,264	.32	21,917,844	23,972,642
Oklahoma	1,998,095	32.9	65,737,326	.30	19,721,198	21,035,944
Arkansas	2,237,397	23.6	52,802,569	.47	24,881,416	1,584,077
Montana	3,980	23.4	93,132	.65	60,536	0
Wyoming	2,528	27.0	68,256	.59	40,271	0
Colorado	113,159	27.9	3,157,136	.50	1,578,568	189,428
New Mexico	40,211	29.4	1,182,203	.72	851,186	59,110
Arizona	7,462	29.5	220,129	.85	187,110	2,201
Utah	11,126	32.0	356,032	.74	263,464	3,560
Idaho	5,231	28.3	148,037	.56	82,901	0
Washington	11,444	25.2	288,389	.55	158,614	8,652
Oregon	18,083	27.6	499,091	.65	324,409	4,991
California	57,158	34.9	1,994,814	.67	1,336,525	259,326
United States	96,743,621	30.3	2,942,480,011	$.39.9	$1,175,333,622	679,543,770

OATS.

Acreage, production, value and distribution of oats in the United States, and amount shipped out of county where grown in 1906, by states.

State or Territory	Acreage—acres	Average yield per acre—bushels	Production—bushels	Average price December 1	Farm value December 1	Shipped out of county where grown—bushels
Maine	112,817	35.8	4,038,849	$.44	$ 1,777,094	80,777
New Hampshire	12,296	34.5	424,212	.44	186,653	0
Vermont	76,955	37.2	2,862,726	.43	1,230,972	0
Massachusetts	6,308	34.0	214,472	.44	94,368	2,145
Rhode Island	1,604	29.3	46,997	.45	21,149	0
Connecticut	9,976	34.2	341,179	.42	143,295	3,412
New York	1,245,628	32.3	40,233,784	.40	16,093,514	2,816,365
New Jersey	62,512	26.6	1,662,819	.38	631,871	182,910
Pennsylvania	1,161,186	27.4	31,816,496	.38	12,090,268	1,590,825
Delaware	3,918	24.5	95,991	.38	36,477	10,559
Maryland	31,834	25.4	808,584	.38	307,262	72,773
Virginia	158,813	18.0	2,858,634	.43	1,229,213	114,345
West Virginia	102,000	20.6	2,101,200	.40	840,480	63,036
North Carolina	195,662	16.2	3,169,724	.49	1,553,165	63,394
South Carolina	191,259	18.5	3,538,292	.57	2,016,826	70,766
Georgia	216,922	15.5	3,362,291	.56	1,882,883	67,246
Florida	28,160	14.0	394,240	.68	268,083	7,885
Ohio	1,475,000	32.8	48,380,000	.33	15,965,400	13,062,600
Indiana	1,780,000	28.2	50,196,000	.32	16,062,720	20,078,400
Illinois	3,653,000	20.7	107,763,500	.31	33,406,685	49,571,210
Michigan	1,425,000	30.7	43,747,500	.33	14,436,675	10,499,400
Wisconsin	2,450,000	37.4	91,630,000	.31	28,405,300	14,660,800
Minnesota	2,215,728	32.5	72,011,160	27	19,443,013	25,203,906
Iowa	4,166,800	34.0	142,036,580	.27	38,349,876	45,048,640
Missouri	644,101	22.8	14,685,503	.33	4,846,216	1,468,550
North Dakota	1,245,711	32.5	40,485,608	.27	10,931,114	7,692,266
South Dakota	1,275,000	36.4	46,410,000	.25	11,602,500	13,923,000
Nebraska	2,450,000	29.5	72,275,000	.26	18,791,500	29,632,750
Kansas	1,050,000	23.6	24,780,000	.31	7,681,800	3,717,000
Kentucky	206,063	21.5	4,430,354	.38	1,683,535	265,821
Tennessee	146,573	21.5	3,151,320	.41	1,292,041	315,132
Alabama	184,179	17.2	3,167,879	.51	1,615,618	31,679
Mississippi	90,374	18.0	1,626,732	.49	797,099	16,267
Louisiana	28,269	17.2	486,227	.45	218,802	
Texas	914,440	34.8	31,822,512	.41	13,047,230	7,955,628
Indian Territory	217,736	34.2	7,446,571	.32	2,382,903	1,414,848
Oklahoma	350,000	34.4	12,040,000	.28	3,371,200	3,491,600
Arkansas	184,571	20.5	3,783,706	.42	1,589,157	75,674
Montana	196,802	43.2	8,501,846	.44	3,740,812	1,870,406
Wyoming	50,103	39.5	1,979,068	.40	791,627	59,372
Colorado	147,584	40.4	5,962,394	.45	2,683,077	1,490,598
New Mexico	12,269	34.6	424,507	.52	220,744	16,980
Arizona	914	34.4	31,442	.65	20,437	6,288
Utah	47,000	43.7	2,053,900	.45	924,255	205,390
Nevada	6,518	38.8	252,898	.64	161,855	25,290
Idaho	107,864	40.7	4,390,065	.43	1,887,728	1,580,423
Washington	172,767	43.2	7,463,534	.41	3,060,049	2,985,414
Oregon	284,660	33.8	9,621,508	.43	4,137,248	3,175,098
California	163,692	31.5	5,156,298	.52	2,681,275	1,495,326
United States	30,960,568	31.2	966,164,102	$.31.7	$306,633,064	266,182,194

WHEAT.

Acreage, production, value of distribution of wheat in the United States, and amount shipped out of county where grown in 1906, by states.

State or Territory	Acreage—acres	Average yield per acre—bushels	Production—bushels	Average price December 1	Farm value December 1	Shipped out of county where grown—bushels
Maine	8,038	24.8	199,342	$1.01	$ 201,335	0
Vermont	1,388	22.3	30,952	.86	26,619	0
New York	467,509	20.0	9,350,180	.82	7,667,148	2,898,556
New Jersey	111,093	18.3	2,033,002	.80	1,626,402	406,600
Pennsylvania	1,642,553	17.7	29,073,188	.76	22,095,623	7,268,297
Delaware	121,745	16.0	1,947,920	.71	1,383,023	1,051,877
Maryland	806,401	16.0	12,902,416	.71	9,160,715	7,870,474
Virginia	744,546	12.5	9,306,825	.81	7,538,528	2,512,843
West Virginia	384,241	12.7	4,879,861	.81	3,952,687	683,181
North Carolina	582,091	9.1	5,297,028	.93	4,926,236	370,792
South Carolina	318,284	9.3	2,960,041	1.10	3,256,045	59,201
Georgia	316,107	10.0	3,161,070	1.02	3,224,291	94,832
Ohio	2,117,750	20.4	43,202,100	.71	30,673,491	22,465,092
Indiana	2,322,750	20.7	48,080,925	.70	33,656,648	25,002,081
Illinois	1,976,200	19.5	38,535,900	.69	26,589,771	19,267,950
Michigan	1,041,600	13.1	13,644,960	.72	9,824,371	4,775,736
Wisconsin	288,040	16.3	4,690,816	.72	3,377,387	422,173
Minnesota	5,119,412	10.9	55,801,591	.65	36,271,034	39,619,130
Iowa	442,810	16.2	7,169,930	.64	4,579,697	2,303,054
Missouri	2,144,250	14.8	31,734,900	.67	21,262,383	15,550,101
North Dakota	5,992,000	13.0	77,896,000	.63	49,074,480	66,211,600
South Dakota	3,131,000	13.4	41,955,400	.61	25,592,794	32,725,212
Nebraska	2,376,560	22.0	52,288,692	.57	29,804,554	35,556,311
Kansas	5,422,508	15.1	81,830,611	.58	47,461,754	63,009,570
Kentucky	818,624	14.1	11,542,598	.73	8,426,097	3,347,353
Tennessee	871,418	12.5	10,892,725	.78	8,496,326	3,049,963
Alabama	98,639	11.0	1,085,029	.94	1,019,927	10,850
Mississippi	1,761	10.0	17,610	.87	15,321	0
Texas	1,228,364	11.5	14,126,186	.77	10,877,163	3,672,808
Indian Territory	240,849	12.0	2,890,188	.62	1,791,917	1,416,192
Oklahoma	1,333,133	14.0	18,663,862	.55	10,265,124	12,318,149
Arkansas	177,338	10.8	1,915,250	.75	1,436,438	114,915
Montana	137,389	24.0	3,297,336	.64	2,110,295	857,307
Wyoming	30,352	28.7	871,102	.73	635,904	43,555
Colorado	254,355	32.5	8,266,538	.65	5,373,250	4,133,269
New Mexico	44,826	25.0	1,120,650	.83	930,140	44,826
Arizona	15,542	25.2	391,658	1.03	403,408	15,666
Utah	178,417	27.4	4,888,626	.65	3,177,607	1,564,360
Nevada	27,604	31.5	869,526	.85	739,097	34,781
Idaho	336,736	24.4	8,231,631	.60	4,938,979	4,609,713
Washington	1,204,201	20.8	25,075,258	.62	15,546,660	19,558,701
Oregon	712,411	20.0	14,215,597	.66	9,443,222	7,818,578
California	1,572,144	17.1	26,883,662	.75	20,162,746	14,517,177
United States	47,263,979	15.5	733,218,682	$ .667	$ 489,016,637	427,252,826

BARLEY.

Acreage, production and value of barley in the United States in 1906, by states.

State or Territory	Acreage—acres	Average yield per acre—bushels	Production—bushels	Average price December 1	Farm value December 1	Average value per acre
Maine	7,661	31.5	241,322	$.65	$ 156,859	$20.48
New Hampshire	1,507	21.4	32,250	.64	20,640	13.70
Vermont	12,810	32.8	420,168	.62	260,504	20.34
New York	86,193	26.3	2,266,876	.55	1,246,782	14.47
Pennsylvania	8,518	25.0	212,950	.55	117,122	13.75
Maryland	1,436	31.0	44,516	.47	20,923	14.57
Virginia	2,398	28.6	68,583	.56	38,406	16.02
Ohio	21,775	30.0	653,250	.46	300,495	13.80
Indiana	8,486	29.4	249,488	.52	129,734	15.29
Illinois	25,298	30.0	758,940	.42	318,755	12.60
Michigan	70,000	26.1	1,827,000	.49	895,230	12.79
Wisconsin	728,000	30.7	22,349,600	.45	10,057,320	13.82
Minnesota	1,128,265	28.0	31,591,420	.35	11,056,997	9.80
Iowa	558,870	26.5	14,858,830	.36	5,349,178	9.54
Missouri	1,648	24.2	39,882	.48	19,143	11.62
North Dakota	613,000	25.8	15,815,400	.33	5,219,082	8.51
South Dakota	790,000	29.0	22,910,000	.32	7,331,200	9.28
Nebraska	120,000	28.0	3,360,000	.31	1,041,600	8.68
Kansas	359,000	23.5	8,436,500	.33	2,784,045	7,76
Kentucky	673	26.0	17,498	.55	9,624	14.30
Tennessee	1,045	23.0	24,035	.60	14,421	13.80
Texas	4,601	24.5	112,724	.61	68,762	14.95
Oklahoma	15,666	29.8	466,847	.33	154,060	9.83
Montana	14,313	33.0	472,329	.56	264,504	18.48
Wyoming	3,000	31.4	94,200	.64	60,288	20.10
Colorado	18,531	41.0	759,771	.54	410,276	22.14
New Mexico	556	27.0	15,012	.63	9,458	17.01
Arizona	13,404	42.0	565,649	.76	429,893	32.07
Utah	12,000	44.0	528,000	.54	285,120	23.76
Nevada	7,089	36.8	260,875	.69	180,004	25.39
Idaho	47,028	41.0	1,928,148	.50	964,074	20.50
Washington	158,994	36.5	5,803,281	.49	2,843,608	17.89
Oregon	59,862	35.0	2,095,170	.52	1,089,488	18.20
California	1,425,000	27.2	38,760,000	.54	20,930,400	14.69
United States	6,320,887	28.3	178,041,414	$.41.5	$ 74,077,995	$11.74

RYE.

Acreage, production and value of rye in the United States in 1906, by states.

State or Territory	Acreage—acres	Average yield per acre—bushels	Production—bushels	Average price December 1	Farm value December 1	Average value per acre
Vermont	1,754	17.4	30,520	$ .62	$ 18,922	$10.79
Massachusetts	3,977	15.0	59,655	65.	38,776	9.75
Connecticut	10,569	18.0	190,242	.66	125,560	11.88
New York	138,081	17.6	2,430,226	.65	1,579,647	11.44
New Jersey	78,363	17.2	1,347,844	.61	822,185	10.49
Pennsylvania	346,265	17.4	6,025,011	.64	3,856,007	11.14
Delaware	1,037	15.0	15,555	.64	9,955	9.60
Maryland	19,704	14.7	289,649	.60	173,789	8.82
Virginia	16,407	13.4	219,854	.70	153,898	9.38
West Virginia	11,336	12.2	138,299	.70	96,809	8.54
North Carolina	15,427	11.0	169,697	.85	144,242	9.35
South Carolina	4,015	8.5	34,128	1.25	42,660	10.63
Georgia	14,206	8.3	117,910	1.05	123,806	8.72
Ohio	52,000	19.5	1,014,000	.57	577,980	11.12
Indiana	65,000	17.0	1,105,000	.58	640,900	9.86
Illinois	64,324	17.0	1,093,508	.56	612,364	9.52
Michigan	400.000	14.5	5,800,000	.59	3,422,000	8.56
Wisconsin	267,427	17.0	4,546,259	.58	2,636,830	9.86
Minnesota	88,448	19.3	1,707,046	.50	853,523	9.65
Iowa	62,535	17.5	1,093,160	.48	520,716	8.40
Missouri	18,000	15.8	284,400	.60	170,640	9.48
North Dakota	23,200	18.7	433,840	.47	203,905	8.79
South Dakota	33,084	18.8	621,979	.45	279,891	8.46
Nebraska	95,000	21.0	1,995,000	.44	877,800	9.24
Kansas	64,142	16.0	1,026,272	.50	513,136	8.00
Kentucky	10,675	15.2	162,260	.70	113,582	10.64
Tennessee	10,036	13.0	130,468	.74	96,546	9.62
Alabama	1,673	12.5	20,912	1.05	21,958	13.12
Texas	4,728	14.6	69,029	.85	58,675	12.41
Oklahoma	2,955	13.9	41,074	.57	23,412	7.92
Arkansas	1,971	12.0	23,652	.83	19,631	9.96
Montana	2,021	20.5	41,430	.66	27,344	13.53
Wyoming	428	19.0	8,132	.72	5,855	13.68
Colorado	2,179	20.0	43,580	.56	24,405	11.20
Utah	3,775	24.0	90,600	.65	58,890	15.60
Idaho	1,575	25.2	39,690	.60	23,814	15.12
Washington	2,678	19.6	52,489	.65	34,118	12.74
Oregon	10,049	17.2	172,843	.74	127,904	12.73
California	62,684	12.8	802,355	.71	569,672	9.09
United States	2,011,904	16.7	33,487,568	$ .58.9	$ 19,701,747	$ 9.83

POTATOES.

Acreage, production and value of potatoes in the United States in 1906, by states.

State or Territory	Acreage—acres	Average yield per acre—bushels	Production—bushels	Average farm price December 1	Farm value December 1	Average value per acre
Maine	109,516	210	22,998,360	$ .50	$ 11,499,180	$105.00
New Hampshire	19,329	112	2,164,848	.60	1,298,909	67.20
Vermont	26,300	101	2,656,300	.55	1,460,965	55.55
Massachusetts	29,149	114	3,322,986	.65	2,159,941	74.10
Rhode Island	6,360	108	686,880	.80	549,504	86.40
Connecticut	31,931	98	3,129,238	.72	2,253,051	70.56
New York	420,406	105	44,142,630	.49	21,629,889	51.45
New Jersey	67,353	120	8,082,360	.66	5,334,358	79.20
Pennsylvania	253,797	94	23,856,918	.57	13,598,443	53.58
Delaware	7,600	97	737,200	.59	434,948	57.23
Maryland	28,751	93	2,673,843	.56	1,497,352	52.08
Virginia	55,656	75	4,174,200	.67	2,796,714	50.25
West Virginia	34,376	97	3,334,472	.61	2,034,028	59.17
North Carolina	23,812	75	1,785,900	.74	1,321,566	55.50
South Carolina	9,065	82	743,330	1.05	780,496	86.10
Georgia	8,627	77	664,279	1.10	730,707	84.70
Florida	3,946	85	335,410	1.10	368,951	93.50
Ohio	157,072	110	17,277,920	.48	8,293,402	52.80
Indiana	75,483	89	6,717,987	.57	3,829,253	50.73
Illinois	150,638	97	14,611,886	.62	9,059,369	60.14
Michigan	285,000	95	27,075,000	.34	9,205,500	32.30
Wisconsin	245,000	97	23,765,000	.30	7,129,500	29.10
Minnesota	131,782	92	12,123,944	.37	4,485,850	34.04
Iowa	115,310	101	11,697,500	.48	5,614,800	48.48
Missouri	85,228	84	7,159,152	.57	4,080,717	47.88
North Dakota	25,171	98	2,466,758	.46	1,134,709	45.08
South Dakota	35,422	100	3,542,200	.35	1,239,770	35.00
Nebraska	84,530	87	7,354,110	.52	3,824,137	45.24
Kansas	85,000	79	6,715,000	.70	4,700,500	55.30
Kentucky	34,736	82	2,848,352	.61	1,737,495	50.02
Tennessee	22,420	80	1,793,600	.62	1,112,032	49.60
Alabama	9,258	75	694,350	.93	645,746	69.75
Mississippi	5,628	85	478,380	.87	416,191	73.95
Louisiana	12,000	62	744,000	.75	558,000	46.50
Texas	31,097	77	2,394,469	.87	2,083,188	66.99
Indian Territory	12,247	76	930,772	.75	698,079	57.00
Oklahoma	10,498	85	892,330	.80	713,864	68.00
Arkansas	20,837	80	1,666,960	.67	1,116,863	53.60
Montana	14,099	152	2,143,048	.61	1,307,259	92.72
Wyoming	4,202	115	483,230	.65	314,100	74.75
Colorado	46,968	125	5,871,000	.45	2,641,950	56.25
New Mexico	1,426	121	172,546	.90	155,291	108.90
Utah	11,987	165	1,977,855	.50	988,928	82.50
Nevada	2,974	175	520,450	.70	364,315	122,50
Idaho	11,900	175	2,082,500	.41	853,825	71.75
Washington	34,199	129	4,411,671	.56	2,470,536	72.24
Oregon	40,083	101	4,048,383	.56	2,267,094	56.56
California	50,291	125	6,286,375	.74	4,651,918	92.50
United States	2,988,460	102.2	306,825,882	$ .51.1	$ 157,443,183	$ 52.29

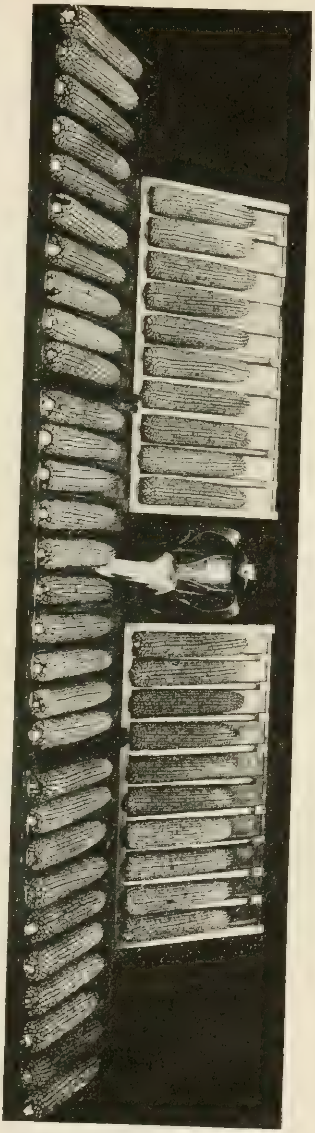


Exhibit of fifty ears of corn by the Packwood Corn Club. Winner of the "Wallaces" Farmer Trophy at the meeting of the Iowa Corn Growers Association, 1908.

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI-

(Figures taken from the December, 1907, Supplement of the Crop

Number	State or Territory	Corn				
		Acreage—acres	Yield per acre—bush.	Production—bush.	Price per bush. Dec. 1	Total farm value Dec. 1
1	Maine	12,000	37.0	444,000	$.75	$ 333,000
2	New Hampshire	26,000	35.0	910,000	.75	682,000
3	Vermont	55,000	36.0	1,980,000	.75	1,485,000
4	Massachusetts	44,000	36.0	1,584,000	.75	1,188,000
5	Rhode Island	10,000	31.2	312,000	.80	250,000
6	Connecticut	56,000	33.0	1,848,000	.75	1,386,000
7	New York	600,000	27.0	16,200,000	.71	11,502,000
8	New Jersey	278,000	31.5	8,757,000	.63	5,517,000
9	Pennsylvania	1,413,000	32.5	45,922,000	.64	29,390,000
10	Delaware	193,000	27.5	5,308,000	.52	2,760,000
11	Maryland	649,000	34.2	22,196,000	.54	11,986,000
12	Virginia	1,841,000	25.0	46,025,000	.64	29,456,000
13	West Virginia	760,000	28.0	21,280,000	.72	15,322,000
14	North Carolina	2,732,000	16.5	45,078,000	.74	33,358,000
15	South Carolina	1,974,000	15.1	29,807,000	.78	23,249,000
16	Georgia	4,426,000	13.0	57,538,000	.76	43,729,000
17	Florida	621,000	11.3	7,017,000	.80	5,614,000
18	Ohio	3,400,000	34.6	117,640,000	.52	61,173,000
19	Indiana	4,690,000	36.0	168,840,000	.45	75,978,000
20	Illinois	9,521,000	36.0	342,756,000	.44	150,813,000
21	Michigan	1,900,000	30.1	57,190,000	.55	31,455,000
22	Wisconsin	1,459,000	32.0	46,688,000	.55	25,678,000
23	Minnesota	1,615,000	27.0	43,605,000	.50	21,802,000
24	Iowa	9,160,000	29.5	270,220,000	.43	116,195,000
25	Missouri	7,775,000	31.0	241,025,000	.47	113,282,000
26	North Dakota	154,000	20.0	3,080,000	.60	1,848,000
27	South Dakota	1,850,000	25.5	47,175,000	.46	21,700,000
28	Nebraska	7,472,000	24.0	179,328,000	.41	73,524,000
29	Kansas	7,020,000	22.1	155,142,000	.44	68,262,000
30	Kentucky	3,300,000	28.2	93,060,000	.53	49,322,000
31	Tennessee	3,014,000	26.0	78,364,000	.57	44,667,000
32	Alabama	2,961,000	15.5	45,896,000	.75	34,422,000
33	Mississippi	2,500,000	17.0	42,500,000	.75	31,875,000
34	Louisiana	1,600,000	17.5	28,000,000	.70	19,600,000
35	Texas	7,409,000	21.0	155,589,000	.60	93,353,000
36	Oklahoma	4,650,000	24.4	113,265,000	.44	49,837,000
37	Arkansas	2,525,000	17.2	43,430,000	.68	29,532,000
38	Montana	4,000	22.5	90,000	.68	61,000
39	Wyoming	3,000	25.0	75,000	.70	52,000
40	Colorado	111,000	23.5	2,608,000	.65	1,695,000
41	New Mexico	42,000	29.0	1,218,000	.72	877,000
42	Arizona	8,000	37.5	300,000	.90	270,000
43	Utah	11,000	25.5	280,000	.72	202,000
44	Nevada	----------	-----	----------	----	----------
45	Idaho	5,000	30.0	150,000	.70	105,000
46	Washington	12,000	27.0	324,000	.70	227,000
47	Oregon	16,000	27.5	440,000	.74	326,000
48	California	54,000	34.0	1,836,000	.85	1,561,000
	United States	99,931,000	25.9	2,592,320,000	$.51.6	$1,336,901,000

PAL FARM CROPS OF THE UNITED STATES IN 1907.

Reporter issued by the United States Department of Agriculture.

Winter Wheat					Spring Wheat					
Acreage —acres	Yield per acre—bush.	Production—bush.	Price per bush. Dec. 1	Total farm value Dec. 1	Acreage —acres	Yield per acre—bush.	Production—bush.	Price per bush. Dec. 1	Total farm value Dec. 1	Number
-----	-----	-----	-----	-----	8,000	26.2	210,000	$1.01	$ 212,000	1
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2
-----	-----	-----	-----	-----	1,000	23.0	23,000	1.00	23,000	3
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	4
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	5
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	6
416,000	17.3	7,197,000	$.99	7,125,000	-----	-----	-----	-----	-----	7
108,000	18.5	1,998,000	.98	1,958,000	-----	-----	-----	-----	-----	8
1,618,000	18.6	30,095,000	.96	28,891,000	-----	-----	-----	-----	-----	9
120,000	20.5	2,460,000	.97	2,386,000	-----	-----	-----	-----	-----	10
777,000	19.0	14,763,000	.96	14,172,000	-----	-----	-----	-----	-----	11
655,000	12.5	8,188,000	.98	8,024,000	-----	-----	-----	-----	-----	12
367,000	12.2	4,477,000	1.00	4,477,000	-----	-----	-----	-----	-----	13
560,000	9.5	5,320,000	1.07	5,692,000	-----	-----	-----	-----	-----	14
314,000	8.5	2,669,000	1.20	3,203,000	-----	-----	-----	-----	-----	15
297,000	9.0	2,673,000	1.15	3,074,000	-----	-----	-----	-----	-----	16
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	17
1,882,000	16.3	30,677,000	.92	28,223,000	-----	-----	-----	-----	-----	18
2,362,000	14.4	34,013,000	.88	29,931,000	-----	-----	-----	-----	-----	19
2,228,000	18.0	40,104,000	.87	34,890,000	-----	-----	-----	-----	-----	20
878,000	14.5	12,731,000	.91	11,585,000	-----	-----	-----	-----	-----	21
60,000	15.5	930,000	.92	856,000	150,000	13.5	2,025,000	.92	1,863,000	22
-----	-----	-----	-----	-----	5,200,000	13.0	67,600,000	.92	62,192,000	23
65,000	18.5	1,202,000	.82	986,000	504,000	12.8	6,451,000	.82	5,290,000	24
2,213,000	13.2	29,212,000	.84	24,538,000	-----	-----	-----	-----	-----	25
-----	-----	-----	-----	-----	5,513,000	10.0	55,130,000	.87	47,963,000	26
-----	-----	-----	-----	-----	2,900,000	11.2	32,480,000	.89	28,907,000	27
2,213,000	19.0	42,047,000	.79	33,217,000	322,000	12.0	3,864,000	.79	3,053,000	28
5,645,000	11.3	63,788,000	.82	52,306,000	314,000	5.8	1,821,000	.82	1,493,000	29
734,000	12.0	8,808,000	.92	8,103,000	-----	-----	-----	-----	-----	30
779,000	9.5	7,400,000	.95	7,030,000	-----	-----	-----	-----	-----	31
89,000	10.0	890,000	1.05	935,000	-----	-----	-----	-----	-----	32
2,000	11.0	22,000	.88	19,000	-----	-----	-----	-----	-----	33
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	34
380,000	7.4	2,812,000	.99	2,784,000	-----	-----	-----	-----	-----	35
959,000	9.0	8,631,000	.83	7,164,000	-----	-----	-----	-----	-----	36
154,000	9.5	1,463,000	.95	1,390,000	-----	-----	-----	-----	-----	37
-----	-----	-----	-----	-----	139,000	28.8	4,003,000	.81	3,243,000	38
-----	-----	-----	-----	-----	30,000	28.5	855,000	.77	658,000	39
-----	-----	-----	-----	-----	293,000	29.0	8,497,000	.78	6,628,000	40
-----	-----	-----	-----	-----	46,000	24.0	1,104,000	.93	1,027,000	41
-----	-----	-----	-----	-----	15,000	25.9	388,000	1.05	408,000	42
-----	-----	-----	-----	-----	161,000	28.8	4,637,000	.74	3,431,000	43
-----	-----	-----	-----	-----	30,000	32.0	960,000	1.04	998,000	44
173,000	26.0	4,498,000	.67	3,014,000	169,000	24.5	4,141,000	.67	2,774,000	45
399,000	29.5	11,770,000	.75	8,828,000	950,000	24.5	23,275,000	.75	17,456,000	46
317,000	25.5	8,084,000	.78	6,306,000	334,000	21.5	7,181,000	.78	5,601,000	47
1,368,000	15.0	20,520,000	.98	20,110,000	-----	-----	-----	-----	-----	48
28,132,000	14.6	409,442,000	$.88.2	361,217,000	17,079,000	13.2	224,645,000	$.86.0	193,220,000	

ACREAGE, PRODUCTION AND VALUE OF THE PRIN

Number	State or Territory	Oats				
		Acreage—acres	Yield per acre—bush.	Production—bush.	Price per bush. Dec. 1	Total farm value Dec. 1
1	Maine	115,000	37.1	4,266,000	$.60	$ 2,560,000
2	New Hampshire	13,000	32.5	423,000	.61	258,000
3	Vermont	78,000	34.0	2,652,000	.63	1,671,000
4	Massachusetts	7,000	35.0	245,000	.60	147,000
5	Rhode Island	2,000	29.5	59,000	.66	39,000
6	Connecticut	10,000	31.5	315,000	.60	189,000
7	New York	1,208,000	30.7	37,086,000	.57	21,139,000
8	New Jersey	60,000	29.5	1,770,000	.56	991,000
9	Pennsylvania	1,003,000	29.6	29,689,000	.54	16,032,000
10	Delaware	4,000	30.0	120,000	.50	60,000
11	Maryland	30,000	27.5	825,000	.49	404,000
12	Virginia	146,000	19.6	2,862,000	.50	1,431,000
13	West Virginia	95,000	19.3	1,834,000	.54	990,000
14	North Carolina	192,000	15.6	2,995,000	.60	1,797,000
15	South Carolian	195,000	20.0	3,900,000	.72	2,808,000
16	Georgia	300,000	16.7	5,010,000	.72	3,607,000
17	Florida	30,000	13.7	411,000	.75	308,000
18	Ohio	1,600,000	22.8	36,480,000	.45	16,416,000
19	Indiana	1,816,000	20.2	36,683,000	.42	15,407,000
20	Illinois	4,150,000	24.5	101,675,000	.41	41,687,000
21	Michigan	1,468,000	20.8	30,534,000	.48	14,656,000
22	Wisconsin	2,350,000	22.0	51,700,000	.47	24,299,000
23	Minnetosa	2,530,000	24.5	61,985,000	.41	25,414,000
24	Iowa	4,500,000	24.2	108,900,000	.38	41,382,000
25	Missouri	663,000	21.5	14,254,000	.41	5,844,000
26	North Dakota	1,320,000	24.5	32,340,000	.40	12,936,000
27	South Dakota	1,325,000	24.7	32,728,000	.39	12,764,000
28	Nebraska	2,524,000	20.4	51,490,000	.37	19,051,000
29	Kansas	1,092,000	15.0	16,380,000	.42	6,879,000
30	Kentucky	192,000	17.6	3,379,000	.49	1,656,000
31	Tennessee	147,000	20.8	3,058,000	.50	1,529,000
32	Alabama	220,000	17.5	3,850,000	.67	2,579,000
33	Mississippi	90,000	17.9	1,611,000	.65	1,047,000
34	Louisiana	28,000	14.5	406,000	.55	223,000
35	Texas	500,000	19.0	9,500,000	.60	5,700,000
36	Oklahoma	418,000	15.0	6,270,000	.48	3,009,000
37	Arkansas	175,000	19.5	3,412,000	.54	1,843,000
38	Montana	240,000	49.0	11,760,000	.46	5,410,000
39	Wyoming	60,000	37.0	2,220,000	.53	1,177,000
40	Colorado	155,000	38.0	5,890,000	.50	2,945,000
41	New Mexico	12,000	38.5	462,000	.55	254,000
42	Arizona	4,000	29.0	116,000	.60	70,000
43	Utah	45,000	45.0	2,025,000	.48	972,000
44	Nevada	7,000	43.0	301,000	.72	217,000
45	Idaho	113,000	50.5	5,706,000	.42	2,397,000
46	Washington	190,000	55.5	10,545,000	.45	4,745,000
47	Oregon	279,000	35.0	9,765,000	.45	4,394,000
48	California	136,000	33.5	4,556,000	.71	3,235,000
	United States	31,837,000	23.7	754,443,000	$.44.3	$ 334,568,000

CIPAL FARM CROPS OF THE UNITED STATES IN 1907.

Barley					Rye					
Acreage —acres	Yield per acre—bush.	Production—bush.	Price per bush. Dec, 1	Total farm value Dec. 1	Acreage —acres	Yield per acre—bush.	Production—bush.	Price per bush. Dec. 1	Total farm value Dec, 1	Number
8,000	28.0	224,000	$.78	$ 175,000	----------	-----	----------	-----	----------	1
2,000	24.0	48,000	.80	38,000	----------	-----	----------	-----	----------	2
14,000	28.5	399,000	.75	299,000	1,800	17.0	30,000	$.78	$ 23,000	3
----------	-----	----------	-----	----------	3,900	16.5	64,000	.90	58,000	4
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----------	-----	----------	-----	----------	10,600	17.0	180,000	.81	146,000	6
79,000	25.0	1,975,000	.80	1,580,000	128,400	16.5	2,119,000	.81	1,716,000	7
----------	-----	----------	-----	----------	78,400	17.5	1,372,000	.76	1,043,000	8
9,000	25.5	230,000	.70	161,000	346,300	16.7	5,783,000	.75	4,337,000	9
----------	-----	----------	-----	----------	1,000	16.5	17,000	.80	14,000	10
1,000	33.0	33,000	.60	20,000	19,700	16.0	315,000	.75	236,000	11
2,000	29.0	58,000	.62	36,000	14,800	14.0	207,000	.80	166,000	12
----------	-----	----------	-----	----------	10,700	12.0	129,000	.82	106,000	13
----------	-----	----------	-----	----------	14,600	10.5	154,000	.97	149,000	14
----------	-----	----------	-----	----------	3,800	10.0	38,000	1.25	48,000	15
----------	-----	----------	-----	----------	14,500	9.0	130,000	1.25	163,000	16
----------	-----	----------	-----	----------	----------	-----	----------	-----	----------	17
28,000	28.0	784,000	.70	549,000	46,800	17.2	805,000	.75	604,000	18
9,000	20.5	184,000	.67	124,000	56,600	17.0	961,000	.72	692,000	19
25,000	28.0	600,000	.67	402,000	59,800	18.5	1,106,000	.71	785,000	20
68,000	22.0	1,496,000	.67	1,002,000	376,000	14.5	5,452,000	.72	3,925,000	21
801,000	23.0	18,423,000	.75	13,817,000	264,700	18.0	4,765,000	.72	3,431,000	22
1,185,000	22.5	26,663,000	.67	17,864,000	88,400	18.5	1,635,000	.66	1,079,000	23
556,000	25.5	14,178,000	.60	8,507,000	53,200	17.8	947,000	.64	606,000	24
2,000	23.0	46,000	.57	8,507,000	17,300	15.4	266,000	.72	192,000	25
855,000	18.3	15,646,000	.58	9,075,000	23,700	16.0	379,000	.60	227,000	26
875,000	23.0	20,125,000	.61	12,276,000	34,800	17.0	591,000	.62	366,000	27
116,000	20.8	2,413,000	.50	1,206,000	88,400	17.0	1,502,000	.59	886,000	28
366,000	12.0	4,392,000	.54	2,372,000	51,300	12.0	615,000	.66	406,000	29
1,000	25.0	25,000	.75	19,000	9,100	13.7	125,000	.86	108,000	30
1,000	20.0	20,000	.70	14,000	8,200	10.0	82,000	.88	72,000	
----------	-----	----------	-----	----------	1,600	10.5	17,000	1.25	21,000	32
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4,000	17.0	68,000	.73	50,000	4,500	10.0	45,000	1.00	45,000	35
35,000	18.7	654,000	.50	327,000	2,300	10.0	23,000	.74	17,000	36
----------	-----	----------	-----	----------	1,700	9.9	17,000	.90	15,000	37
17,000	38.0	646,000	.62	400,000	2,100	22.0	47,000	.68	32,000	38
4,000	32.0	128,000	.68	87,000	400	21.5	9,000	.66	6,000	39
25,000	40.0	1,000,000	.60	600,000	2,300	20.5	47,000	.62	29,000	40
1,000	26.0	26,000	.70	18,000	----------	-----	----------	-----	----------	41
26,000	35.5	923,000	.78	720,000	----------	-----	----------	-----	----------	42
11,000	39.0	429,000	.58	249,000	3,800	20.0	76,000	.65	49,000	43
7,000	40.0	280,000	.83	232,000	----------	-----	----------	-----	----------	44
49,000	44.5	2,181,000	.58	1,265,000	1,700	24.7	41,000	.63	26,000	45
165,000	40.5	6,682,000	.58	3,876,000	2,900	21.5	62,000	.77	48,000	46
61,000	42.0	2,562,000	.57	1,460,000	10,100	16.0	162,000	.82	133,000	47
1,040,000	28.9	30,056,000	.78	23,444,000	65,800	19.0	1,251,000	.85	1,063,000	48
6,448,000	23.8	153,597,000	$.66.6	102,290,000	1,926,000	16.4	31,566,000	$.73.1	$23,068,000	

ACREAGE, PRODUCTION, AND VALUE OF POTATOES OF THE UNITED STATES IN 1907.

State or Territory	Potatoes (Irish)				
	Acreage —acres	Yield per acre—bushels	Production—bushels	Price per bushel Dec. 1	Total farm value December 1
Maine	118,000	145	17,110,000	$ .56	$ 9,582,000
New Hampshire	19,000	120	2,280,000	.67	1,528,000
Vermont	26,000	120	3,120,000	.53	1,654,000
Massachusetts	30,000	120	3,600,000	.84	3,024,000
Rhode Island	6,000	110	660,000	.93	614,000
Connecticut	32,000	100	3,200,000	.77	2,464,000
New York	426,000	98	41,748,000	.57	23,796,000
New Jersey	70,000	120	8,400,000	.74	6,216,000
Pennsylvania	261,000	88	22,968,000	.67	15,389,000
Delaware	8,000	99	792,000	.65	515,000
Maryland	30,000	95	2,850,000	.60	1,710,000
Virginia	56,000	80	4,480,000	.68	3,046,000
West Virginia	34,000	83	2,822,000	.80	2,258,000
North Carolina	23,000	88	2,024,000	.78	1,579,000
South Carolina	9,000	70	630,000	1.10	693,000
Georgia	10,000	83	830,000	1.00	830,000
Ohio	157,000	76	11,932,000	.68	8,114,000
Indiana	84,000	87	7,308,000	.65	4,750,000
Illinois	154,000	87	13,398,000	.72	9,647,000
Michigan	299,000	90	26,910,000	.45	12,109,000
Wisconsin	250,000	91	22,750,000	.45	10,237,000
Minnesota	145,000	101	14,645,000	.41	6,004,000
Iowa	141,000	85	11,985,000	.55	6,592,000
Missouri	87,000	82	7,134,000	.72	5,136,000
North Dakota	27,000	89	2,403,000	.62	1,490,000
South Dakota	39,000	84	3,276,000	.50	1,638,000
Nebraska	88,000	73	6,424,000	.70	4,497,000
Kansas	87,000	65	5,655,000	.88	4,976,000
Kentucky	37,000	80	2,960,000	.75	2,220,000
Tennessee	22,000	85	1,870,000	.76	1,421,000
Alabama	15,000	95	1,425,000	1.00	1,425,000
Mississippi	6,000	90	540,000	.93	502,000
Louisiana	12,000	67	804,000	.90	724,000
Texas	33,000	73	2,409,000	1.05	2,529,000
Oklahoma	28,000	70	1,960,000	1.00	1,960,000
Arkansas	25,000	70	1,750,000	.91	1,592,000
Montana	18,000	150	2,700,000	.50	1,350,000
Wyoming	5,000	200	1,000,000	.74	740,000
Colorado	47,000	150	7,050,000	.66	4,653,000
New Mexico	1,000	100	100,000	.96	96,000
Utah	12,000	100	1,200,000	.65	780,000
Nevada	3,000	200	600,000	.90	540,000
Idaho	14,000	145	2,030,000	.52	1,056,000
Washington	40,000	150	6,000,000	.50	3,000,009
Oregon	42,000	125	5,250,000	.56	2,940,000
California	48,000	145	6,960,000	.60	6,264,000
United States	3,124,000	95.4	297,942,000	$ .61.7	$ 183,880,000

STATISTICS OF THE PRINCIPAL FARM PRODUCTS OF THE WORLD.

(Figures furnished by the Bureau of Statistics, Department of Agriculture, except where otherwise credited. All prices on gold basis.

CORN.

Corn crop of countries named 1901-5.

(Substantially the crop of the world.)

Country	1901	1902	1903	1904	1995
	Bushels	Bushels	Bushels	Bushels	Bushels
NORTH AMERICA.					
United States	1,522,520,000	2,523,648,000	2,244,177,000	2,467,481,000	2,707,994,000
Canada (Ontario)	25,621,000	21,159,000	30,211,000	20,880,000	21,582,000
Mexico	93,459,000	78,099,000	90,879,000	88,131,000	89,000,000
Total North America	1,641,600,000	2,622,906,000	2,365,267,000	2,576,492,000	2,818,576,000
SOUTH AMERICA.					
Argentina	98,842,000	84,018,000	148,948,000	175,189,000	140,708,000
Chile	1,500,000	866,000	1,118,000	1,477,000	1,000,000
Uruguay	5,576,000	5,060,000	5,289,000	3,035,000	4,417,000
Total South America	105,918,000	89,944,000	155,355,000	179,701,000	146,125,000
EUROPE.					
Austria-Hungary:					
Austria	17,535,000	13,462,000	16,056,000	12,529,000	17,293,000
Hungary proper	127,389,000	104,546,000	135,751,000	59,400,000	94,042,000
Croatia-Slavonia	20,469,000	15,255,000	23,776,000	11,364,000	18,385,000
Bosnia-Herzegovina	9,800,000	5,863,000	8,411,000	6,464,000	9,584,000
Total Austria-Hungary	175,193,000	139,126,000	183,994,000	89,757,000	139,304,000
Bulgaria	25,000,000	18,109,000	22,836,000	12,758,000	19,649,000
France	26,393,000	24,928,000	25,360,000	19,482,000	24,030,000
Italy	100,455,000	71,028,000	88,990,000	93,640,000	97,859,000
Portugal	15,000,000	16,000,000	14,000,000	15,000,000	16,000,000
Roumania	116,945,000	68,447,000	80,272,000	19,598,000	59,275,000
Russia:					
Russia proper	60,771,000	40,377,000	40,397,000	18,956,000	22,533,000
Poland	----------	----------	----------	13,000	----------
Northern Caucasia*	7,623,000	8,270,000	10,335,000	7,063,000	11,018,000
Total Russia (European)	68,394,000	48,647,000	50,732,000	26,032,000	33,551,000
Servia	18,849,000	18,396,000	19,479,000	9,498,000	21,431,000
Spain	25,759,000	25,272,000	18,759,000	21,300,000	31,900,000
Total Europe	571,988,000	429,953,000	504,422,000	307,065,000	442,999,000
AFRICA.					
Algeria	529,000	556,000	435,000	391,000	400,000
Anglo-Egyptian Sudan	200,000	200,000	184,000	189,000	232,000
Cape of Good Hope	2,000,000	2,000,000	3,502,000	3,000,000	3,000,000
Egypt	30,000,000	30,000,000	30,000,000	30,000,000	30,000,000
Natal	4,479,000	4,143,000	1,997,000	5,282,000	4,822,000
Total Africa	37,208,000	36,899,000	36,118,000	38,862,000	38,454,000

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*Includes government of Chernomorsk.

CORN—Continued.

Country	1902	1903	1904	1905	1906
	Bushels	Bushels	Bushels	Bushels	Bushels
AUSTRALASIA.					
Australian Commonwealth	9,650,000	7,256,000	4,988,000	9,972,000	8,374,000
New Zealand	519,000	590,000	627,000	547,000	506,000
Total Australasia	10,169,000	7,846,000	5,615,000	10,519,000	8,880,000
Grand total	2,366,883,000	3,187,548,000	3,066,777,000	3,112,639,000	3,455,034,000

OATS.

Oat crop of countries named, 1902-1906.

(Substantially the crop of the world.)

Country	1902	1903	1904	1905	1906
NORTH AMERICA.					
United States	987,843,000	784,094,000	894,596,000	953,216,000	964,905,000
Canada:					
New Brunswick	5,481,000	5,974,000	5,316,000	5,659,000	5,875,000
Ontario	109,786,000	113,337,000	105,393,000	108,890,000	111,756,000
Manitoba	35,565,000	34,077,000	37,434,000	46,917,000	52,291,000
Saskatchewan	7,196,000	9,453,000	11,095,000	19,819,000	24,721,000
Alberta	3,896,000	5,351,000	5,786,000	9,814,000	14,209,000
Other	43,000,000	43,000,000	43,000,000	43,000,000	43,000,000
Total Canada	204,924,000	211,192,000	208,024,000	234,099,000	251,852,000
Mexico	13,000	13,000	18,000	17,000	17,000
Total North America	1,192,780,000	995,299,000	1,102,638,000	1,187,332,000	1,216,774,000
EUROPE.					
Austria-Hungary:					
Austria	125,473,000	128,330,000	109,611,000	123,880,000	154,551,000
Hungary proper	82,807,000	87,334,000	62,775,000	78,009,000	87,733,000
Croatia-Slavonia	6,301,000	7,330,000	4,907,000	6,075,000	6,200,000
Bosnia-Herzegovina	3,001,000	5,612,000	3,829,000	2,935,000	3,836,000
Total Austria-Hungary	217,582,000	228,606,000	181,122,000	210,899,000	252,320,000
Belgium	45,588,000	48,345,000	37,499,000	33,786,000	40,000,000
Bulgaria	10,000,000	11,389,000	11,179,000	10,263,000	18,793,000
Denmark	40,822,000	41,176,000	38,183,000	32,659,000	38,000,000
Finland	15,190,000	17,046,000	16,995,000	15,000,000	16,000,000
France	276,948,000	300,366,000	257,811,000	269,581,000	258,454,000
Germany	514,452,000	542,432,000	477,852,000	451,017,000	580,875,000
Italy	13,000,000	16,000,000	14,000,000	16,000,000	18,000,000
Netherlands	19,241,000	20,112,000	18,592,000	16,045,000	18,000,000
Norway	6,674,000	9,091,000	6,922,000	9,868,000	8,000,000
Roumania	21,905,000	33,108,000	12,608,000	18,974,000	26,165,000
Russia:					
Russia proper	807,888,000	650,405,000	1,006,102,000	767,550,000	544,873,000
Poland	63,167,000	58,745,000	44,393,000	61,933,000	66,424,000
Northern Caucasia	16,112,000	18,939,000	14,593,000	22,228,000	21,968,000
Total Russia (European)	887,167,000	728,089,000	1,065,088,000	851,711,000	633,265,000
Servia	4,044,000	4,398,000	3,167,000	3,549,000	4,642,000
Spain	23,349,000	22,942,000	18,500,000	22,305,000	45,632,000
Sweden	57,323,000	59,641,000	51,578,000	58,488,000	68,631,000

OATS—CONTINUED.

Country	1902 Bushels	1903 Bushels	1904 Bushels	1905 Bushels	1906 Bushels
United Kingdom:					
Great Britain—					
England	89,809,000	85,400,000	86,728,000	76,453,000	84,102,000
Scotland	36,760,000	36,379,000	37,034,000	36,390,000	35,107,000
Wales	7,924,000	6,832,000	7,661,000	7,264,000	8,063,000
Ireland	65,570,000	58,816,000	60,142,000	60,754,000	60,000,000
Total United Kingdom	200,063,000	187,427,000	191,565,000	180,861,000	187,272,000
Total Europe	2,353,348,000	2,270,168,000	2,402,661,000	2,201,006,000	2,214,049,000
ASIA.					
Cyprus	236,000	481,000	417,000	400,000	400,000
Russia:					
Central Asia	9,433,000	11,342,000	8,014,000	14,279,000	9,806,000
Siberia	34,078,000	60,352,000	51,101,000	70,672,000	69,872,000
Total Russia (Asiatic)	43,511,000	71,694,000	59,115,000	84,951,000	79,678,000
Total Asia	43,747,000	72,175,000	59,532,000	85,351,000	80,078,000
AFRICA.					
Algeria	8,732,000	7,976,000	6,631,000	6,000,000	8,000,000
Cape of Good Hope	1,750,000	2,503,000	2,000,000	2,000,000	2,000,000
Natal	9,000	6,000	43,000	9,000	9,000
Tunis	324,000	1,631,000	4,635,000	2,032,000	2,411,000
Total Africa	10,815,000	12,116,000	13,309,000	10,041,000	12,420,000
AUSTRALIA.					
Queensland	44,000	1,000	73,000	16,000	6,000
New South Wales	709,000	363,000	1,292,000	673,000	911,000
Victoria	6,937,000	4,542,000	13,858,000	6,353,000	7,460,000
South Australia	484,000	640,000	931,000	573,000	897,000
Western Australia	164,000	173,000	267,000	233,000	293,000
Tasmania	1,756,000	1,808,000	1,673,000	1,216,000	1,238,000
Total Australian Commonwealth	10,094,000	7,527,000	18,094,000	9,064,000	10,805,000
New Zealand	15,519,000	22,452,000	15,583,000	15,012,000	13,108,000
Total Australasia	25,613,000	29,979,000	33,677,000	24,076,000	23,913,000
Grand total	3,626,303,000	3,379,737,000	3,611,817,000	3,507,806,000	3,547,234,000

WHEAT.

Wheat crop of countries named, 1902-1906.

(Substantially the crop of the world.)

NORTH AMERICA.					
United States	670,063,000	637,822,000	552,400,000	692,979,000	735,261,000
Canada:					
New Brunswick	468,000	471,000	371,000	418,000	420,000
Ontario	26,904,000	22,583,000	13,030,000	22,195,000	22,806,000
Manitoba	54,750,000	41,381,000	40,397,000	57,519,000	63,181,000
Saskatchewan	13,524,000	15,598,000	16,447,000	26,930,000	38,207,000
Alberta	877,000	1,238,000	968,000	2,379,000	3,896,000
Other	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Total Canada	100,523,000	85,271,000	75,213,000	113,441,000	132,510,000
Mexico	8,477,000	10,493,000	9,393,000	5,000,000	5,000,000
Total North America	779,063,000	733,586,000	637,006,000	811,420,000	872,771,000

WHEAT—CONTINUED.

Country	1902	1903	1904	1905	1906
	Bushels	Bushels	Bushels	Bushels	Bushels
SOUTH AMERICA.					
Argentina	56,380,000	103,759,000	129,672,000	150,745,000	134,931,000
Chile	10,641,000	10,114,000	17,948,000	20,000,000	15,800,000
Uruguay	7,604,000	5,240,000	7,565,000	6,000,000	4,606,000
Total South America	74,625,000	119,113,000	155,185,000	176,745,000	155,337,000
EUROPE.					
Austria-Hungary:					
Austria	49,655,000	46,198,000	53,734,000	54,531,000	58,255,000
Hungary proper	170,884,000	161,958,000	137,078,000	157,512,000	197,408,000
Croatia-Slavonia	12,017,000	14,664,000	9,841,000	13,077,000	10,343,000
Bosnia-Herzegovina	2,384,000	3,901,000	3,753,000	3,016,000	2,693,000
Total Austria-Hungary	234,940,000	226,721,000	204,406,000	228,136,000	268,699,000
Belgium	14,521,000	12,350,000	13,817,000	12,401,000	13,000,000
Bulgaria	35,000,000	35,551,000	42,242,000	40,736,000	55,076,000
Denmark	4,528,000	4,461,000	4,302,000	4,083,000	4,400,000
Finland	79,000	130,000	133,000	130,000	130,000
France	327,841,000	364,320,000	298,826,000	353,453,000	324,725,000
Germany	143,315,000	130,626,000	139,803,000	135,947,000	144,754,000
Greece	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Italy	136,210,000	184,451,000	167,635,000	160,504,000	168,000,000
Montenegro	200,000	200,000	200,000	200,000	200,000
Netherlands	5,105,000	4,258,000	4,423,000	5,109,000	4,700,000
Norway	265,000	307,000	212,000	329,000	300,000
Portugal	10,400,000	8,000,000	6,500,000	5,000,000	8,000,000
Roumania	76,220,000	73,700,000	53,738,000	103,328,000	113,867,000
Russia:					
Russia proper	463,258,000	454,596,000	519,964,000	451,327,000	358,000,000
Poland	20,349,000	19,255,000	21,241,000	20,239,000	19,000,000
Northern Caucasia (a)	77,069,000	77,941,000	81,132,000	96,817,000	73,000,000
Total Russia (European)	560,676,000	551,792,000	622,337,000	568,383,000	450,000,000
Severia	11,409,000	10,885,000	11,676,000	11,262,000	13,211,000
Spain	133,523,000	128,979,000	95,377,000	92,054,000	154,090,000
Sweden	4,757,000	5,538,000	5,135,000	5,529,000	6,227,000
Switzerland	4,200,000	4,000,000	4,000,000	4,000,000	4,000,000
Turkey (European)	25,000,000	26,000,000	23,000,000	20,000,000	22,000,000
United Kingdom:					
Great Britain—					
England	55,216,000	46,524,000	35,624,000	57,424,000	57,583,000
Scotland	1,856,000	1,528,000	1,499,000	2,130,000	2,063,000
Wales	1,391,000	1,093,000	919,000	1,204,000	1,308,000
Ireland	1,602,000	1,176,000	1,040,000	1,430,000	1,400,000
Total United Kingdom	60,065,000	50,321,000	39,082,000	62,188,000	62,354,000
Total Europe	1,796,254,000	1,830,590,000	1,744,844,000	1,802,772,000	1,825,733,000
ASIA.					
British India, including native states where reporting	227,380,000	297,601,000	359,936,000	283,063,000	319,586,000
Cyprus	897,000	2,477,000	2,176,000	2,000,000	2,000,000
Japanese Empire:					
Japan	20,243,000	9,600,000	19,754,000	18,437,000	18,000,000
Formosa	107,000	179,000	190,000	200,000	200,000
Total Japanese Empire	20,350,000	9,779,000	19,944,000	18,637,000	18,200,000

(a) Includes government of Chermonorsk.

WHEAT—CONTINUED.

Country	1902 Bushels	1903 Bushels	1904 Bushels	1905 Bushels	1906 Bushels
Persia	13,600,000	16,000,000	16,000,000	16,000,000	16,000,000
Russia:					
Central Asia	15,897,000	20,995,000	12,822,000	25,491,000	21,000,000
Siberia	30,796,000	48,670,000	31,590,000	42,411,000	35,000,000
Total Russia (Asiatic)	46,693,000	69,665,000	44,412,000	67,902,000	56,000,000
Turkey (Asiatic)	35,000,000	33,000,000	33,000,000	33,000,000	33,000,000
Total Asia	343,920,000	428,522,000	475,468,000	402,602,000	444,786,000
AFRICA.					
Algeria	33,896,000	34,035,000	25,484,000	20,000,000	28,000,000
Cape of Good Hope	2,000,000	1,755,000	2,000,000	2,000,000	2,000,000
Egypt	12,000,000	11,000,000	12,000,000	12,000,000	12,000,000
Natal	4,000	4,000	7,000	4,000	4,000
Sudan (Anglo-Egyptian)	300,000	294,000	486,000	483,000	400,000
Tunis	4,127,000	7,523,000	10,519,000	5,729,000	4,409,000
Total Africa	52,327,000	54,611,000	50,496,000	40,216,000	46,813,000
AUSTRALASIA.					
Australia:					
Queensland	1,746,000	6,000	2,514,000	2,217,000	1,173,000
New South Wales	15,275,000	1,635,000	28,196,000	16,983,000	21,391,000
Victoria	12,510,000	2,650,000	29,425,000	21,666,000	24,156,000
South Australia	8,265,000	6,555,000	13,626,000	12,454,000	20,779,000
Western Australia	963,000	1,017,000	1,935,000	2,077,000	2,381,000
Tasmania	994,000	905,000	792,000	818,000	801,000
Total Australian Commonwealth	39,753,000	12,768,000	76,488,000	56,215,000	70,681,000
New Zealand	4,174,000	7,693,000	8,140,000	9,411,000	7,013,000
Total Australasia	43,927,000	20,461,000	84,628,000	65,626,000	77,694,000
Grand total	3,090,116,000	3,186,883,000	3,147,627,000	3,317,381,000	3,423,134,000

BARLEY.

Barley crop of countries named, 1902-1906.

(Substantially the crop of the world.)

NORTH AMERICA.					
United States	134,954,000	131,861,000	139,749,000	136,651,000	178,916,000
Canada:					
New Brunswick	110,000	108,000	96,000	100,000	102,000
Ontario	22,580,000	25,147,000	25,342,000	25,030,000	26,049,000
Manitoba	12,222,000	8,982,000	11,530,000	14,507,000	18,085,000
Saskatchewan	308,000	687,000	617,000	922,000	1,358,000
Alberta	488,000	1,111,000	1,659,000	1,830,000	2,242,000
Other	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Total Canada	38,708,000	39,035,000	42,244,000	45,389,000	50,836,000
Mexico	6,045,000	9,061,000	7,355,000	6,000,000	6,000,000
Total North America	179,707,000	179,957,000	189,348,000	188,040,000	235,752,000

BARLEY—CONTINUED.

Country	1902	1903	1904	1905	1906
	Bushels	Bushels	Bushels	Bushels	Bushels
EUROPE.					
Austria-Hungary:					
Austria	73,788,000	73,873,000	66,815,000	70,469,000	76,024,000
Hungary proper	62,350,000	64,577,000	49,915,000	62,452,000	69,747,000
Croatia-Slavonia	3,259,000	3,839,000	2,285,000	2,864,000	3,007,000
Bosnia-Herzegovina	3,208,000	4,145,000	3,496,000	3,236,000	3,606,000
Total Austria-Hungary	142,605,000	146,434,000	122,511,000	139,021,000	152,384,000
Belgium	4,974,000	3,923,000	5,003,000	4,518,000	5,000,000
Bulgaria	11,000,000	12,773,000	12,911,000	12,080,000	12,882,000
Denmark	23,287,000	23,340,000	22,708,000	21,146,000	22,000,000
Finland	3,628,000	5,233,000	4,916,000	5,000,000	5,000,000
France	41,948,000	43,345,000	38,338,000	40,841,000	37,004,000
Germany	142,392,000	152,653,000	135,409,000	134,204,000	142,901,000
Italy	6,000,000	8,000,000	7,000,000	8,000,000	8,000,000
Netherlands	4,652,000	3,823,000	3,606,000	4,013,000	4,000,000
Norway	2,143,000	3,255,000	2,496,000	3,464,000	3,000,000
Roumania	24,586,000	29,716,000	11,567,000	26,383,000	33,539,000
Russia:					
Russia proper	274,899,000	289,699,000	290,766,000	272,694,000	243,620,000
Poland	22,185,000	20,819,000	17,705,000	22,732,000	23,351,000
Northern Caucasia	35,530,000	39,980,000	31,254,000	43,430,000	37,319,000
Total Russia (European)	332,614,000	350,498,000	339,725,000	338,856,000	304,290,000
Servia	3,495,000	3,424,000	3,162,000	3,670,000	4,848,000
Spain	81,279,000	64,359,000	53,800,000	45,974,000	91,185,000
Sweden	12,283,000	13,570,000	13,452,000	12,858,000	14,952,000
United Kingdom:					
Great Britain—					
England	56,679,000	50,628,000	48,511,000	48,778,000	51,543,000
Scotland	8,394,000	7,739,000	7,408,000	8,257,000	7,803,000
Wales	3,518,000	2,981,000	3,077,000	2,906,000	3,116,000
Ireland	8,273,000	6,076,000	5,478,000	7,181,000	7,000,000
Total United Kingdom	76,864,000	67,424,000	64,474,000	67,122,000	69,462,000
Total Europe	913,750,000	931,770,000	841,078,000	867,150,000	910,447,000
ASIA.					
Cyprus	1,374,000	3,969,000	3,122,000	3,000,000	3,000,000
Japanese Empire:					
Japan	74,078,000	59,737,000	80,795,000	77,436,000	73,000,000
Formosa	13,000	38,000	58,000	50,000	50,000
Total Japanese Empire	74,091,000	59,775,000	80,853,000	77,486,000	73,050,000
Russia:					
Central Asia	3,008,000	2,759,000	2,262,000	3,145,000	5,136,000
Siberia	2,628,000	4,213,000	4,268,000	4,965,000	2,614,000
Total Russia (Asiatic)	5,636,000	6,972,000	6,530,000	8,110,000	7,750,000
Total Asia	81,101,000	70,716,000	90,505,000	88,596,000	83,800,000
AFRICA.					
Algeria	47,912,000	38,496,000	36,125,000	35,000,000	40,000,000
Anglo-Egyptian Sudan	200,000	216,000	251,000	327,000	300,000
Cape of Good Hope	800,000	949,000	850,000	850,000	850,000
Natal	8,000	4,000	6,000	7,000	6,000
Tunis	3,201,000	11,322,000	14,815,000	7,119,000	7,863,000
Total Africa	52,121,000	50,987,000	52,047,000	43,303,000	49,019,000

BARLEY—CONTINUED.

Country	1902	1903	1904	1905	1906
	Bushels	Bushels	Bushels	Bushels	Bushels
AUSTRALASIA.					
Australia:					
Queensland	286,000	4,000	527,000	342,000	64,000
New South Wales	107,000	19,000	180,000	275,000	115,000
Victoria	716,000	579,000	1,256,000	902,000	1,096,000
South Australia	251,000	327,000	503,000	358,000	522,000
Western Australia	37,000	48,000	55,000	39,000	51,000
Tasmania	173,000	207,000	219,000	168,000	97,000
Total Australian Commonwealth	1,570,000	1,184,000	2,740,000	2,084,000	1,945,000
New Zealand	883,000	1,172,000	1,197,000	1,164,000	1,056,000
Total Australasia	2,453,000	2,356,000	3,937,000	3,248,000	3,001,000
Grand total	1,229,132,000	1,235,786,000	1,176,915,000	1,190,337,000	1,282,019,000

RYE.

Rye crop of countries named, 1902-1906.

(Substantially the crop of the world.)

NORTH AMERICA.					
United States	33,631,000	29,363,000	27,242,000	28,486,000	33,375,000
Canada:					
Ontario	3,620,000	3,064,000	2,065,000	1,769,000	1,369,000
Manitoba	51,000	51,000	130,000	179,000	104,000
Other	800,000	800,000	800,000	800,000	800,000
Total Canada	4,471,000	3,915,000	2,995,000	2,748,000	2,273,000
Mexico	100,000	136,000	67,000	60,000	60,000
Total North America	38,202,000	33,414,000	30,304,000	31,294,000	35,708,000
EUROPE.					
Austria-Hungary:					
Austria	82,482,000	81,130,000	91,685,000	98,192,000	99,246,000
Hungary proper	49,458,000	47,355,000	43,880,000	54,089,000	51,962,000
Croatia-Slavonia	3,049,000	3,386,000	2,038,000	2,537,000	2,409,000
Bosnia-Herzegovina	257,000	396,000	360,000	374,000	395,000
Total Austria-Hungary	135,246,000	132,267,000	137,963,000	155,192,000	154,012,000
Belgium	22,374,000	21,756,000	21,988,000	21,349,000	22,000,000
Bulgaria	8,000,000	7,750,000	7,772,000	7,541,000	10,818,000
Denmark	18,779,000	19,305,000	16,546,000	19,245,000	19,000,000
Finland	8,841,000	10,598,000	10,362,000	9,000,000	10,000,000
France	47,051,000	57,951,000	52,141,000	58,116,000	51,095,000
Germany	373,768,000	389,923,000	396,075,000	378,204,000	378,948,000
Italy	3,200,000	4,000,000	3,000,000	4,000,000	4,000,000
Netherlands	13,971,000	13,973,000	13,517,000	13,742,000	14,000,000
Norway	776,000	857,000	717,000	982,000	800,000
Roumania	6,958,000	7,145,000	2,201,000	7,344,000	8,900,000
Russia:					
Russia proper	810,537,000	803,296,000	893,205,000	629,671,000	568,200,000
Poland	75,257,000	69,100,000	76,606,000	69,088,000	63,800,000
Northern Caucasia	8,654,000	7,498,000	8,179,000	9,950,000	6,400,000
Total Russia (European)	894,448,000	879,894,000	977,990,000	708,709,000	638,400,000

RYE—CONTINUED.

Country	1901	1902	1903	1904	1905
	Bushels	Bushels	Bushels	Bushels	Bushels
Servia	1,084,000	1,091,000	1,031,000	1,103,000	1,560,000
Spain	26,187,00	22,511,000	14,185,000	26,500,000	31,828,000
Sweden	22,293,000	23,360,000	20,708,000	24,393,000	26,247,000
United Kingdom	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Total Europe	1,584,976,000	1,594,381,000	1,678,196,000	1,437,420,000	1,373,608,000
ASIA.					
Russia:					
Central Asia	1,489,000	1,066,000	1,088,000	690,000	600,000
Siberia	23,080,000	30,982,000	29,360,000	28,043,000	29,900,000
Total Russia (Asiatic)	24,569,000	32,048,000	30,448,000	28,733,000	30,500,000
Total Asia	24,569,000	32,048,000	30,448,000	28,733,000	30,500,000
AUSTRALASIA.					
Australia:					
Queensland	....	7,000	2,000	1,000	2,000
New South Wales	39,000	35,000	83,000	35,000	51,000
Victoria	15,000	22,000	31,000	32,000	30,000
Western Australia	3,000	5,000	4,000	5,000	5,000
Tasmania	13,000	9,000	11,000	12,000	11,000
Total Australian Commonwealth	70,000	78,000	131,000	85,000	99,000
New Zealand	28,000	40,000	21,000	33,000	65,000
Total Australasia	98,000	118,000	152,000	118,000	164,000
Grand total	1,647,845,000	1,659,961,000	1,739,100,000	1,497,565,000	1,439,980,000

POTATOES.

Potato crop of countries named, 1901-1905.

(No statistics for Switzerland, Portugal, Argentina, Transvaal, Egypt, and some other less important potato-growing countries.)

NORTH AMERICA.					
United States	187,598,000	284,633,000	247,128,000	332,830,000	260,741,000
Canada:					
Ontario	18,688,000	13,350,000	17,202,000	15,967,000	14,819,000
Manitoba	4,949,000	3,568,000	4,907,000	3,919,000	4,910,000
New Brunswick	4,206,000	4,288,000	4,835,000	5,550,000	5,693,000
Other*	30,000,000	30,000,000	30,000,000	30,000,000	30,000,000
Total Canada	57,843,000	51,206,000	56,944,000	55,436,000	55,422,000
Mexico	336,000	347,000	539,000	527,000	‡400,000
Newfoundland*	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000
Total North America	247,127,000	337,536,000	305,961,000	390,143,000	317,913,000
SOUTH AMERICA.					
Chile	10,000,000	11,616,000	10,349,000	6,131,000	6,532,000
EUROPE.					
Austria-Hungary:					
Austria	437,110,000	428,229,000	357,121,000	398,298,000	581,822,000
Hungary proper	158,494,000	141,538,000	165,386,000	110,402,000	168,221,000
Croatia-Slavonia	17,512,000	13,059,000	19,337,000	9,311,000	‡15,000,000
Bosnia-Herzegovina	2,893,000	1,793,000	2,322,000	2,450,000	2,485,000
Total Austria-Hungary	616,009,000	584,619,000	544,166,000	520,461,000	767,528,000

POTATOES—CONTINUED.

Country	1901	1902	1903	1904	1095
	Bushels	Bushels	Bushels	Bushels	Bushels
Belgium	101,082,000	83,198,000	86,580,000	91,632,000	57,159,000
Denmark	22,002,000	27,168,000	25,256,000	24,214,000	29,953,000
Finland	16,325,000	15,298,000	19,212,000	15,465,000	16,500,000
France	411,055,000	441,534,000	450,262,000	451,039,000	‡438,000,000
Germany	1,788,950,000	1,596,969,000	1,576,361,000	1,333,326,000	1,775,579,000
Italy†	29,000,000	29,000,000	29,000,000	29,000,000	29,000,000
Malta	264,000	361,000	628,000	733,000	387,000
Netherlands	94,910,000	94,756,000	73,394,000	94,421,000	87,043,000
Norway	24,320,000	17,735,000	22,851,000	17,253,000	25,832,000
Roumania	3,819,000	4,659,000	5,246,000	3,001,000	3,733,000
Russia:					
Russia proper	566,926,000	723,435,000	675,330,000	705,170,000	686,502,000
Poland	287,712,000	288,447,000	194,829,000	179,997,000	331,529,000
Northern Caucasia	10,801,000	16,154,000	17,441,000	8,741,000	14,857,000
Total Russia (European)	865,439,000	1,028,036,000	887,600,000	893,908,000	1,032,888,000
Servia	1,237,000	1,402,000	1,527,000	718,000	1,232,000
Spain‡	84,000,000	84,000,000	84,000,000	84,000,000	84,000,000
Sweden	43,793,000	51,377,000	59,317,000	51,314,000	74,819,000
United Kingdom:					
Great Britain	137,060,000	119,250,000	108,779,000	133,961,000	140,474,000
Ireland	125,896,000	101,761,000	88,227,000	98,635,000	127,793,000
Total United Kingdom	262,956,000	221,011,000	197,006,000	232,596,000	268,267,000
Total Europe	4,365,161,000	4,281,126,000	4,062,406,000	3,843,081,000	4,691,920,000
ASIA.					
Japan	10,153,000	7,418,000	9,824,000	11,274,000	‡10,000,000
Russia (Asiatic)	14,273,000	13,142,000	19,364,000	18,800,000	18,865,000
Total Asia	24,426,000	20,560,000	29,188,000	30,074,000	28,865,000
AFRICA.					
Algeria	1,673,000	1,851,000	1,596,000	1,655,000	‡1,700,000
Cape of Good Hope	§1,600,000	§1,600,000	§1,600,000	1,942,000	*2,000,000
Natal	316,000	433,000	345,000	451,000	466,000
Total Africa	3,589,000	3,884,000	3,541,000	4,048,000	4,166,000
AUSTRALASIA.					
Australia:					
Queensland	747,000	836,000	122,000	659,000	718,000
New South Wales	2,361,000	1,461,000	1,147,000	2,118,000	1,820,000
Victoria	4,597,000	4,684,000	6,300,000	6,262,000	3,467,000
South Australia	544,000	562,000	1,057,000	1,173,000	729,000
Western Australia	181,000	214,000	242,000	170,000	210,000
Tasmania	3,504,000	4,282,000	6,105,000	6,395,000	4,127,000
Total Australian Commonwealth	11,934,000	12,039,000	14,973,000	16,777,000	11,071,000
New Zealand	7,721,000	7,215,000	7,795,000	5,025,000	5,025,000
Total Australasia	19,655,000	19,254,000	22,768,000	21,802,000	16,096,000
Grand total	4,669,958.000	4.673.973.000	4.434.213.000	4,295.279.000	5.065.492.000

*Estimated from returns for census year.
†Average, 1896-1900.
‡Average production.
§Estimated from statistics for 1899 and 1904.

NUMBER, AVERAGE PRICE AND TOTAL VALUE OF FARM

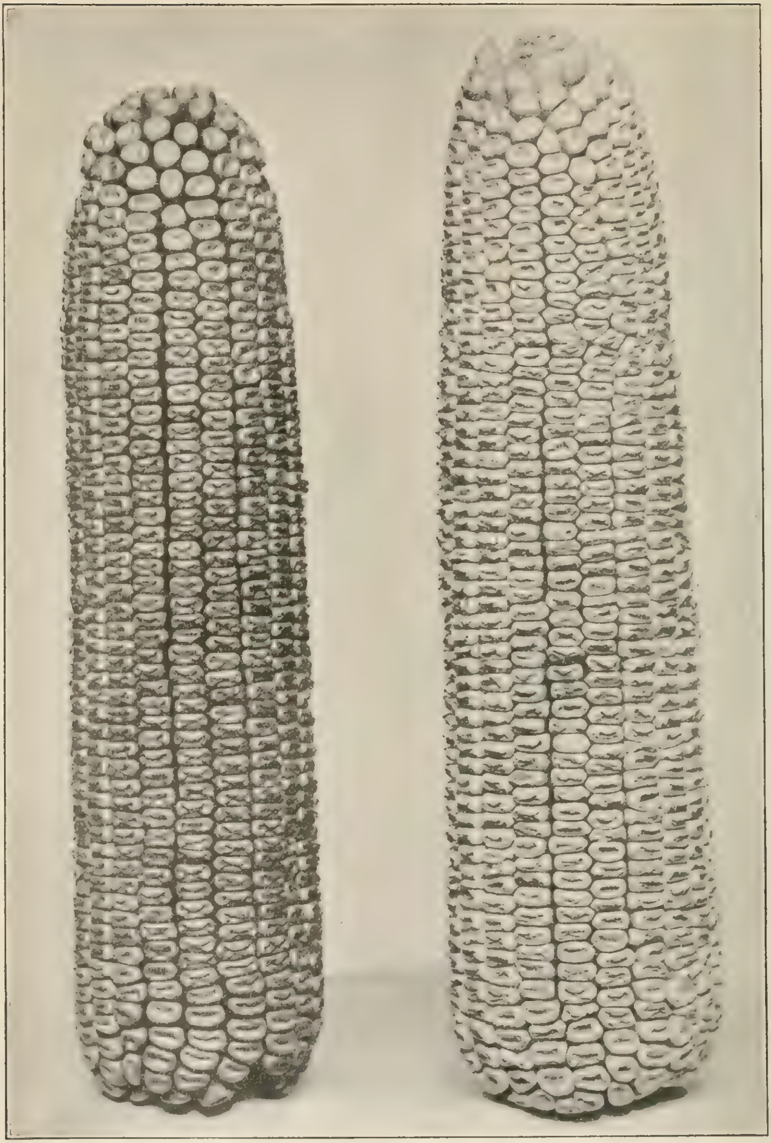
Report from the Statistical Bureau,

Stetes and Territories	Horses			Mules			Milch Cows		
	Number	Aveaage per head	Total value	Number	Average per head	Total value	Number	Average per head	Total value
Maine	116,000	$106.00	$ 12,296,000	--------	--------	--------	183,000	$31.00	$ 5,673,000
New Hampshire	60,000	101.00	6,060,000	--------	--------	--------	128,000	32.50	4,160,000
Vermont	93,000	101.00	9,393,000	--------	--------	--------	291,000	30.00	8,730,000
Massachusetts	81,000	111.00	8,991,000	--------	--------	--------	196,000	40.00	7,840,000
Rhode Island	14,000	121.00	1,694,000	--------	--------	--------	26,000	42.50	1,105,000
Connecticut	60,000	118.00	7,080,000	--------	--------	--------	138,000	37.50	5,175,000
New York	696,000	113.00	78,648,000	4,000	$122.00	$ 488,000	1,789,000	33.50	59,932,000
New Jersey	102,000	113.00	11,526,000	5,000	135.00	675,000	190,000	43.00	8,170,000
Pennsylvania	607,000	114.00	69,198,000	41,000	124.00	5,084,000	1,152,000	36.00	41,472,000
Delaware	37,000	99.00	3,663,000	6,000	125.00	750,000	37,000	36.50	1,350,000
Maryland	158,000	94.00	14,852,000	20,000	121.00	2,420,000	155,000	32.00	4,960,000
Virginia	311,000	97.00	30,167,000	51,000	124.00	6,324,000	288,000	28.00	8,064,000
West Virginia	189,000	102.00	19,278,000	11,000	110.00	1,210,000	247,000	33.00	8,151,000
North Carolina	190,000	107.00	20,330,000	177,000	126.00	22,302,000	294,000	24.00	7,056,000
South Carolina	84,000	118.00	9,912,000	138,000	143.00	19,734,000	138,000	27.00	3,726,000
Georgia	139,000	111.00	15,429,000	232,000	140.00	32,480,000	308,000	25.00	7,700,000
Florida	52,000	104.00	5,408,000	18,000	142.00	2,556,000	91,000	29.00	2,639,000
Ohio	949,000	111.00	105,339,000	20,000	110.00	2,200,000	928,000	36.00	33,408,000
Indiana	814,000	105.00	85,470,000	88,000	111.00	9,768,000	660,000	33.00	21,780,000
Illinois	1,591,000	107.00	170,237,000	143,000	113.00	16,159,000	1,184,000	35.00	41,440,000
Michigan	704,000	105.00	73,920,000	4,000	107.00	428,000	849,000	34.00	28,866,000
Wisconsin	643,000	105.00	67,515,000	5,000	94.00	470,000	1,392,000	30.50	42,456,000
Minnesota	723,000	98.00	70,854,000	9,000	103.00	927,000	1,040,000	28.00	29,120,000
Iowa	1,419,000	99.00	140,481,000	44,000	108.00	4,752,000	1,555,000	30.50	47,428,000
Missouri	957,000	88.00	84,216,000	321,000	101.00	32,421,000	965,000	28.50	27,502,000
North Dakota	616,000	97.00	59,752,000	8,000	112.00	896,000	224,000	27.50	6,160,000
South Dakota	560,000	86.00	48,160,000	8,000	100.00	800,000	618,000	27.50	16,995,000
Nebraska	1,015,000	87.00	88,305,000	68,000	102.00	6,936,000	879,000	29.00	25,491,000
Kansas	1,108,000	87.00	96,396,000	140,000	99.00	13,860,000	722,000	29.00	20,938,000
Kentucky	391,000	95.00	37,145,000	201,000	106.00	21,306,000	398,000	27.50	10,945,000
Tennessee	315,000	97.00	30,555,000	284,000	108.00	30,672,000	331,000	23.00	7,613,000
Alabama	160,000	89.00	14,240,000	234,000	113.00	26,442,000	283,000	21.00	5,943,000
Mississippi	260,000	77.00	20,020,000	279,000	105.00	29,295,000	330,000	20.00	6,600,000
Louisiana	224,000	66.00	14,784,000	168,000	109.00	18,312,000	190,000	24.00	4,560,000
Texas	1,278,000	65.00	83,070,000	637,000	91.00	57,967,000	1,072,000	26.00	27,872,000
Oklahoma	744,000	73.00	54,312,000	168,000	96.00	16,128,000	338,000	26.00	8,788,000
Arkansas	279,000	68.00	18,972,000	209,000	95.00	19,855,000	384,000	18.50	7,104,000
Montana	292,000	73.00	21,316,000	4,000	82.00	328,000	69,000	36.00	2,484,000
Wyoming	117,000	60.00	7,020,000	1,000	96.00	96,000	23,000	38.00	874,000
Colorado	262,000	71.00	18,602,000	10,000	95.00	950,000	144,000	37.00	5,328,000
New Mexico	118,000	42.00	4,956,000	7,000	70.00	490,000	25,000	38.00	950,000
Arizona	101,000	53.00	5,353,000	4,000	89.00	356,000	23,000	43.00	989,000
Utah	119,000	71.00	8,449,000	3,000	61.00	183,000	79,000	31.00	2,449,000
Nevada	102,000	77.00	7,854,000	4,000	86,00	344,000	17,000	45.00	765,000
Idaho	150,000	75.00	11,250,000	2,000	100.00	200,000	69,000	32.00	2,208,000
Washington	311,000	98.00	30,478,000	4,000	104.00	416,000	184,000	37.00	6,808,000
Oregon	285,000	96.00	27,360,000	7,000	99.00	693,000	158,000	35.00	5,530,000
California	396,000	94.00	37,224,000	82,000	113.00	9,266,000	410,000	36.00	14,760,000
Total 1908	19,992,000	$ 93.41	$1,867,530,000	3,869,000	$107.76	$416,939,000	21,194,000	$30.67	$650,057,000
Total 1907	19,746,583	$ 93.51	$1,846,578,012	3,816,692	$112.16	$428,063,613	20,968,265	$31.00	$645,496,980
Total 1906	18,718,578	80.72	1,510,889,906	3,404,061	98.31	334,680,520	19,793,866	29.44	582,788,592
Total 1905	17,057,702	70.37	1,200,310,020	2,888,710	87.18	251,840,378	17,572,464	27.44	482,272,203
Total 1904	16,736,059	67.93	1,136,940,298	2,757,916	78.88	217,532,832	17,419,817	29.21	508,841,489
Total 1902	16,533,224	58.61	968,935,178	2,728,088	72.49	197,753,327	17,106,227	30.21	516,711,914
Total 1903	16,557,373	62.25	1,030,705,059	2,757,017	67.61	186,411,704	16,696,802	29.23	488,130,324

ANIMALS IN THE UNITED STATES ON JANUARY 1, 1908.

U. S. Department of Agriculture.

Other Cattle			Sheep			Swine		
Number	Average per head	Total value	Number	Average per head	Total value	Nnmber	Average per head	Total value
151,000	$16.00	$ 2,416,000	267,000	$4.09	$ 1,092,000	67,000	$8.75	$ 586,000
103,000	17.00	1,751,000	77,000	3.87	298,000	52,000	9.25	481,000
221,000	14.00	3,094,000	223,000	4.16	928,000	99,000	8.15	807,000
92,000	17.00	1,564,000	45,000	4.49	202,000	70,000	10.25	718,000
10,000	19.00	190,000	8,000	4.40	35,000	13,000	10.00	130,000
83,000	19.00	1,577,000	34,000	4.75	162,000	47,000	10.50	494,000
907,000	17.00	15,419,000	1,131,000	4.81	5,440,000	669,000	8.90	5,954,000
82,000	21.00	1,722,000	44,000	4.99	220,000	155,000	10.00	1,550,000
965,000	18.00	17,370,000	1,102,000	4.62	5,091,000	990,000	7.80	7,722,000
22,000	20.00	440,000	12,000	4.64	56,000	46,000	7.50	345,000
140,000	20.00	2,800,000	163,000	4.55	742,000	293,000	6.35	1,861,000
561,000	19.00	10,659,000	512,000	4.00	2,048,000	798,000	5.75	4,588,000
549,000	22.00	12,078,000	675,000	4.40	2,970,000	379,000	5.75	2,179,000
450,000	12.00	5,400,000	220,000	2.62	576,000	1,357,000	5.60	7,599,000
223,000	12.00	2,676,000	59,000	2.17	128,000	678,000	5.70	3,865,000
680,000	11.00	7,480,000	269,000	2.01	541,000	1,599,000	5.50	8,794,000
664,000	10.00	6,640,000	101,000	1.97	199,000	399,000	3.75	1,496,000
1,050,000	21.00	22,050,000	3,110,000	4.48	13,933,000	2,559,000	6.50	16,634,000
1,096,000	21.00	23,016,000	1,215,000	5.06	6,148,000	3,159,000	6.20	19,586,000
2,164,000	22.00	47,608,000	793,000	5.01	3,973,000	4,672,000	6.60	30,835,000
1,003,000	16.00	16,048,000	2,130,000	4.46	9,500,000	1,388,000	6.60	9,161,000
1,137,000	13.00	14,781,000	1,044,000	4.15	4,333,000	1,910,000	7.00	13,370,000
1,279 000	12.00	15,348,000	459,000	3.79	1,740,000	1,267,000	7.10	8,996,000
3,881.000	21.00	81,501,000	718,000	4.97	3,568,000	8,413,000	6.50	54,684,000
2,349,000	20.00	46,980,000	1,017,000	4.36	4,434,000	3,593,000	5.15	18,504,000
642,000	16.00	10,272,000	627,000	3.56	2,232,000	233,000	7.50	1,748,000
1,426,000	18.00	25,668,000	821,000	3.63	2,980,000	903,000	7.00	6,321,000
3,265,000	19.00	62,035,000	431,000	3.76	1,621,000	4,243,000	6.25	26,519,000
3,577,000	20.00	71,540,000	236,000	4.15	979,000	2,663,000	5.90	15,712,000
714,000	18.00	12,852,000	1,071,000	4.22	4,520,000	1,274,000	4.60	5,860,000
595,000	12.00	7,140,000	348,000	3.39	1,180,000	1,502,000	4.65	6,984,000
539,000	8.00	4,312,000	188,000	1.94	365,000	1,251,000	4.60	5,755,000
589,000	8.00	4,712,000	181,000	1.80	326,000	1,316,000	4.50	5,922,000
480,000	10.00	4,800,000	180,000	1.79	322,000	669,000	4.50	3,010,000
7,825,000	12.00	93,900,000	1,799,000	2.74	4,929,000	3,147,000	5.25	16,522,000
1,814,000	16.00	29,024,000	98,000	2.88	282,000	1,588,000	5.33	8,464,000
695,000	8.00	5,560,000	266,000	2.13	567,000	1,127,000	3.80	4,283,000
879,000	20.00	17,580,000	5,524,000	3.90	21,544,000	66,000	10.00	660,000
838,000	24.00	20,112,000	5,885,000	4.15	24,423,000	18,000	9.25	166,000
1,454,000	20.00	29,080,000	1,695,000	3.33	5,644,000	150,000	8.00	1,200,000
939,000	17.00	15,963,000	4,787,000	3.45	16,515,000	26,000	7.00	182,000
603,000	17.00	10,251,000	1,031,000	3.62	3,732,000	18,000	8.00	144,000
324,000	17.00	5,508,000	2,967,000	3.88	11,512,000	61,000	7.50	458,000
367,000	20.00	7,340,000	1,586,000	3.79	6,011,000	15,000	10.00	150,000
344,000	17.00	5,848,000	3,575,000	3.55	12,691,000	130,000	7.00	910,000
389,000	18.00	7,002,000	824,000	3.73	3,074,000	182,000	7.75	1,410,000
758,000	17.00	12,886,000	2,661,000	3.58	9,526,000	279,000	6.25	1,744,000
1,155,000	19.00	21,945,000	2,422,000	3.47	8,404,000	551,000	7.20	3,967,000
50,073,000	$16.89	$845,938,000	54,631,000	$3.88	$211,736,000	56,084,000	$6.05	$339,030,000
51,565,731	$17.10	$881,557,398	53,240,082	$3.84	$204,210,129	54,794,439	$7.62	$417,791,321
47,067,656	15.85	746,171,709	50,631,619	3.54	179,056,144	52,102,847	6.18	321,802,571
43,669,443	15.15	661,571,308	45,170,423	2.82	127,331,850	47,320,511	5.99	283,254,978
43,629,498	16.32	712,178,134	51,630,144	2.59	133,530,099	47,009,367	6.15	289,224,627
44,659,206	18.45	824,054,902	63,964,876	2.63	168,315,750	46,922,624	7.78	364,973,688
44,727,797	18.76	839,126,073	62,039,091	2.65	164,446,091	48,698,890	7.03	342,120,180



Champion single ear at the State Farmers Institute, Des Moines, December, 1907.

First prize white, and reserve Champion at the Iowa State Fair and Exposition, 1907.

PART III.

Proceedings of the State Farmers' Institute and Agricultural Convention

Held in the Rooms of the

Department of Agriculture,

Des Moines, Iowa,

Tuesday and Wednesday, Dec. 10-11, 1907.

FORENOON SESSION, 9:30 A. M.

THE PRESIDENT: You will please come to order, and we will commence the program. The first will be the address of welcome, by Hon. G. L. Dobson, of Des Moines.

ADDRESS OF WELCOME.

G. L. DOBSON, DES MOINES, IOWA.

Mr. President and Members of the State Farmers' Institute: I can assure you that it is with great pleasure that, on behalf of the citizens of Des Moines, I welcome you to our city.

It is not to be wondered at that the people of Des Moines are interested in your work, when we realize that the properity of our city and the prosperity of the state depends upon the success that you make of your work.

Many years ago, when I first attended a state fair, we had but a very small fair. When I came to Iowa first, 38 years ago, this was quite a new state. I went to Northwestern Iowa in 1869, when there was not a railroad in that section of the state. How wonderfully it has grown and what great prosperity the state has had in the years gone by; and when we realize that Iowa is purely an agricultural state, and that the great wealth has come from the farmers, it is not, as I said before, to be wondered at that the business men of every section of the state are interested in your meetings. They are interested in all that you accomplish, for, when you succeed, they have a chance to succeed; when you fail they are certain to fail. Whenever the farmers of our country are succeeding, then the merchants and manufacturers are succeeding. The business men of every line or calling have a chance to succeed when the farmers do, but when they go down in adversity, all other lines are bound to go down with them.

We are all proud of the citizenship of the great state of Iowa. Last year we produced in live-stock alone more than 40 million dollars above any state in the union. This has been largely brought about because of the intelligence which the stock men have put into their work. If we had the old scrubby cattle we used to have when I first came to Iowa, no such showing could be made. When the farmers last year produced about 100 million dollars worth of corn—a sum well nigh incomprehensible, to be added to the wealth of the great state of Iowa—the bulls and bears of Wall street may have their wrangles—but when the farmers of Iowa who are tilling the soil put their best thought and energy into it, it is not going to affect Iowa so much; they can go on and gamble and for a time affect the business interests, but so long as the soil produces abundantly under the guidance of intelligent men and women Iowa will be all right.

We are proud to welcome you here today, because you men here have done so much to distinctly put Iowa above every other state in the union by the grand exhibits you are making every year at our state fair. It has been my fortune to travel from the east to the west, from one ocean to the other, several times in the last few years, but I have heard Iowa talked about every place I go—that you men make the best exhibition of stock in any state of the union. These are things, friends, we feel proud of, and we feel it is a great pleasure to welcome you to our state.

I hope Des Moines is doing what she should to encourage these things and will do her part to make your work as easy as possible. It will always be hard work; nothing worth having can be had without effort. No man succeeds in life, only when he is willing to pay the price. No farmer succeeds, only as he is willing to pay the price and finds out what is the very best for him to do.

What a changed condition do we find today from what it was when I first came to the state. In almost every line of work we cut and covered, so as to get over the ground, when we plowed. But she has made many steps in advance. When we realize that 45 million people in Japan live on 15 million acres of cultivated land, the fence corners and waste spots in Iowa today would practically support the population of Japan, if it was cultivated as intensely as those little Japs cultivate. Their average farm is less than two acres in extent, and it will produce enough to support a family. And while we have accomplished much, our young men need not think there is no field open for them today, for there is as much to be accomplished by them as there was in the early days, and Iowa can be kept in the very foreground of the states of the union. Intense farming is what made it prosperous.

Now, gentlemen, it is not in place for me to talk to you extensively, but simply to make an address of welcome; and I can assure you that the great Commercial Club of Des Moines, with nearly a thousand members, and business men, extends to you a hearty welcome, and the hope that this session will be the best session that you have had since you first came to Des Moines.

RESPONSE TO ADDRESS OF WELCOME.

G. H. VAN HOUTEN, LENOX, IOWA.

Mr. Pesident: I am sure, in responding to this cordial address of Mr. Dobson on behalf of the citizens of Des Moines, I can say that we are very grateful for the kind words spoken. Yet we realized we were welcome, even without these eloquent words uttered in our presence. Some of us, in fact, have come to Des Moines so often and stayed so long that we have almost felt at home here. If I were speaking for myself, I would speak differently; but as I am delegated to speak for you all, and some of you do not come here as often, you may not appreciate the hearty welcome the people of Des Moines are ready and willing to give you.

It has been my privilege to be closely identified with our state fair for several years, and it has been my privilege to be associated with the people of Des Moines for many years, and the more I know of the State Fair, and the more I know of Des Moines and the state of Iowa, the more I am conscious of the fact that the prosperity of all are linked closely together. So that the people of Des Moines, in giving us the welcome they do, understand and believe that the State Fair is a state institution. While the interests of the state are closely connected with the State Fair, so the interests of Des Moines and all our interests lie close together.

I can appreciate these words of welcome; I can realize and know they come from the heart and that they are truly meant.

There are some things said by Mr. Dobson I would enlarge upon. The people of Iowa are industrious, and while industrious, they are prodigals; while in some things they may be economical, they have not learned in the school of economy. It has been my privilege to visit Japan, so that the illustration he gave you is one that appeals to me. These 45 million of people in Japan make their living and actually live on an area less than half the size of the state of Iowa. The entire Empire of Japan—and at the time I visited it was before their recent acquisitions of China and Corea—comprises ten thousand square miles, less than the state of California; and when you consider that so much of it is not tillable, then you can realize the force and effect of the illustration Mr. Dobson has given; and when we consider that their wage schedule is so much lower than ours, and taking all these things into account, we can truly say that Japan is wonderfully prosperous; and this gives us some idea of economy we know nothing about, and I trust and hope that the necessities of the people of the orient shall not come to us. That we have become lavish and to a degree careless goes without saying The time has come in Iowa when better methods must be resorted to. We have high priced land, high priced labor and a higher schedule of living, and I hope and trust it may never be lower. If we are to maintain these high standards of prosperity we must make our lands more productive; we must conserve the different forces and gain the best advantages possible by more intelligent application.

I realize much has been done in the past. I give the organization of the Iowa State Fair credit for its share in this better and more improved work. We have had our annual meetings and fairs, and I trust each one has been better than the one preceding, and I further trust that the future holds out better prospects.

It must be a pleasure to you gentlemen who come to our annual meetings and attend our annual fairs to see the rapid rate of progress made. When I first knew the State Fair we had very few buildings and of a poor character. When I first knew Des Moines it was different then; my earliest recollections were in the vicinity of Des Moines. I have known Iowa when it had not a railroad within its borders. Now, that it has nearly ten thousand miles of railroads and electric lines, with all the advantages of rapid communication by telephone and other means, Iowa has been put in a very different position. So we welcome this change; we rejoice in its prosperity, and we are only anxious and solicitous that this prosperity shall continue. I am sure the people of Des Moines will co-operate to help make this effort a success. I am sure the people of Des Moines will co-operate in a continuation of this success, which is evidenced by its magnificent gift to the state in establishing this great fair. It has been my privilege to visit several of the fairs of other states, as well as many exhibitions of other countries. I can say, in my judgment, we have the ideal fair and the ideal conditions in a most remarkable agricultural community.

Mr. Dobson made the statement that this was purely an agricultural state, and it is true, no doubt. But it is not true that we will always remain an agricultural state. Why? We have the coal—the motive power—to make a great manufacturing state. With our incresing demands, and increasing population, no one can say this will always be an agricultural state. It is true that our magnificent soil naturally led us into agricultural pursuits, and the lack of these advantages in other states, to manufacturing pursuits. But the time will come, I think, when we will see fit to diversify our industries; when with our 18,000 acres of coal lands and the impetus of our rivers for disseminating the power of electricity, and all these things, then, if not before, will there be a diversity of our industries. We are not dependent on corn, grain, hogs and cattle and horses; we raise other crops and animals, and just so as time goes on we will increase these opportunities and diversities.

I shall not attempt at this time to give you my ideas of what the future should be. But it is certain as time goes on, we will resort to better methods, more scientific investigation and application as the days and years shall come and pass, and with it we hope and expect that our State Fair and State Farmers' Institute will not only keep pace, but will go beyond the march of progress.

So, Mr. Dobson and the people of Des Moines, we return to you our hearty acknowledgment of your kind welcome. You have spoken to us, and we shall try to appreciate your friendship. Then when the time comes for the State Fair we all hope to be back again with our friends and neighbors, so that we may have a royal good time, and that the next Fair will be better than any yet held in the state of Iowa.

THE PRESIDENT: The next number on our program is "A Discussion of Iowa Statutes With Reference to Feeding Stuffs," by H. R. Wright, State Food and Dairy Commissioner.

A DISCUSSION OF IOWA STATUTES WITH REFERENCE TO FEEDING STUFFS.

H. R. WRIGHT, FOOD AND DAIRY COMMISSIONER.

Mr. President: I suppose this subject was put on the program more to call attention to something the Board of Agriculture has been engaged in, rather than to give any particular information in regard to the statute.

This Board, as organized, one of the things with which it was charged was the investigation of adulterations. Those investigations have been carried on by means of a committee, of which Gov. Packard has been chairman. These investigations have resulted in the enactment of a general pure food law and also a stock food law.

The stock food law embraces three subjects: one being the so-called Continental Stock Food, and the other subject, that of concentrated feeding stuffs, as they are usually known, and the third subject, the question of seeds that are either adulterated or impure, by reason of mixtures, etc. So, that these three subjects are embraced in the statute, and I may say, there probably never was a law of such relative importance, that took so much hustling to get it passed through the legislature You would naturally suppose it would have been universally favored, but the developments were different.

As to the law in relation to Continental Stock Foods, we originally sought to have the names of the ingredients put upon the label upon all packages. I may say, such a law was enacted in a half dozen other states last year The makers of the Continental Stock Foods devoted their attention to our legislature and succeeded in blocking some of the provisions your committee put in the bill, but they got the same kind of medicine in other states. We succeeded in having put into our statute a provision that the label should bear a statement and name the percentage of the diluent. The statutes passed in the other states were in effect that they should give the names of the ingredients, while in Iowa they were to give the percentage of the diluent.

We thought, and think so the more yet, that the filler in the Continental Stock Food was one of the elements of fraud. For example, in one of our committee meetings last winter one of the manufacturers of one of those foods was made to admit by Prof. Michael that he had 65 per cent oil meal and 10 per cent salt. At any rate it was 65 per cent of oil meal. The committee, believing the diluent was one of the chief elements of fraud, succeeded eventually in getting that provision put into the statute, although they beat us on our original intention, they should give the name of all ingredients. However, the stock food manufacturers are all agreeing that they will print the names of the ingredients on their packages. I suppose you all realize that the business of manufacturing and selling these foods is principally carried on by men of very large means, and attempted by men of small means. About 100 of these foods are on the market. The up-shot of the whole matter is, the Continental manufacturers have formed a sort of conspiracy to beat these laws in the various states Their action in this state has been in the form of an injunction in the Federal court of this district, against the Food Commissioner, restraining him from an attempt to enforce this law at all. This is the situation at the present time.

I suppose one might be a little reluctant to admit that the law which he is charged with enforcing has not been enforced. That is the situation. The reason for it is, as I have stated, an action for an injunction has been brought attacking the constitutionality of the law, and for that reason nothing can be done towards enforcement until the injunction is dismissed or dissolved; and in the event it is made permanent it cannot be enforced.

The law in relation to concentrated commercial feeding stuffs requires that every package shall bear a statement of the protein and fibre and fat. Those of you who have made any study of food stuffs understand why this is necessary. The reasons that may occur to you were not altogether what actuated the committee of the legislature in passing the law. There was a very extensive adulteration of feed stuffs in this state, the motives which prompted the enactment of the bill, not that the farmer needed necessarily the information or needed to be educated as to what protein was in a food, of brans or other feeds, but more, that the maker and seller of them should say how much he had; then if he had an examination of the article, he could say it truthfully, and if he had an article that was worthless he would be obliged to say that truthfully, and the man who bought avoided being cheated, thinking he was getting something better than he really had; that feature of the statute has already done considerable good. Prof. Michael found a lot of these foods adulterated with wheat hulls and other things. The adulteration of them has apparently, so far as we know at the present time, ceased.

The law does not prohibit the sale of stock food at all, with the exception that it prohibits the sale of wheat or rye screenings containing cockle or other poisonous or deleterious substances. The statute permits the sale of concentrated commercial feeding stuffs, whether simple or mixed, provided the seller tells exactly what he has got. If he has a simple food like a bi-product he is required to give the percentage of protein, fibre or fat. If he has a mixed food he is required in addition to state the constituents, names of the ingredients, to state also on the package the number of pounds net weight.

In addition to this the statute requires that upon such foods there shall be paid a license of ten cents a ton, and these tags are to be secured from the office of the Food Commissioner on the payment of the necessary amount. This particular feature of the law has aroused great opposition on the part of millers, and still more on the part of feed dealers. They do not object so much to the money phase as to the difficulty and trouble of attaching the tags, and the opposition to the statute comes with the retailer or small dealer.

You know, of course, many of our food stuffs of the kind in question come in from the outside of the state: still a considerable quantity is manufactured in the state. The question as to whether the statute is violated as applied to foods outside of the state, is raised by the American Linseed Co. They, too, have applied for an injunction in the Federal court, alleging that the whole statute is unconstitutional. So that I am obliged to say now, frankly, the law has been enforced up to the present time It became effective the 4th of July and almost immediately applications for injunctions were made.

However, we have collected about $5,000.00 on the ten cent tags. We have made some headway, even though we have not prosecuted anybody, except one fellow in Delaware county, for selling food which wasn't what he claimed it was.

The third feature of the statute has not affected anything, for the reason that the sale of seeds is usually conducted from the middle of winter to spring, and very few seeds have gone on the market since. The law is that a man who sells seeds may not sell seed which contains quack-grass, Canada thistle, etc., and he is absolutely prohibited from selling seeds containing any noxious weed seeds. The thought is, that a man who gets these weeds in the land is not only injured in the loss of the purchase price of the seeds, but a thousand-fold more in the difficulty of getting the weeds in the soil. The seed dealer is prohibited from selling seeds containing any of these particular noxious weed seeds. Then he is required to have his seeds to a certain standard of purity. That is, if a man buys a bushel of timothy seed he is entitled to get 96 per cent of timothy seed, the other 4 per cent may be harmless mixtures of weed seeds, which simply goes to the loss of the value of the price of the seed. The dealer is permitted to sell under the statute seed containing less than the standard of purity, but in that case he must put on a label stating the names of the seeds present and the amount of it. So that a man might sell clover seed, for instance, with which some timothy seed had been mixed. In that case he could easily take the timothy seed out. The thought is that the farmer is to be protected against the purchase, first, of seeds containing these noxious weed seeds, and against the purchase of seed represented to be pure seed.

These are the three phases of the law, and I am frank to admit the law has not been well enforced, for the reasons suggested. If this law is finally upheld, the feeders of this state will pretty nearly know what percentage protein, fibre and fat is contained in the food which they buy; and the thought is that an intelligent man will be able to determine what value in dollars and cents the feed has he is buying, and that on the seeds, he will have the same chance to protect his pocktbook and will be fully protected against the chances of getting these noxious weeds into his field, which are so extremely difficult to eradicate.

I may say, in closing, that the committee of which Gov. Packard is chairman, has in hand now the investigation of some weeds as they appear in this state, the intention being to get legislation to control them and eradicate them, the intention being to perpetuate the usefulness of our soil to the greatest extent possible by eradicating the weeds which are so detrimental. If there are any questions I can answer, I should be glad to attempt to do so.

QUESTION: Mr. Wright says the farmers are protected. If a farmer has got a lot of seeds himself, and he sells timothy seed or clover to his neighbor, and he is not in a position to get this exact per cent, where is he at?

MR. WRIGHT: The law makes an exception in that case, which is as follows: "The provisions concerning agricultural seeds contained in this act shall not apply to: Any person or persons growing or selling seeds for food purposes only, or having such seeds in possession for sale for such purposes." The law does not apply to the man who sells his grain or seeds to the elevator and does not apply to any person selling seeds direct to merchants and that covers the case of a man producing the seed he wishes to sell to a seed dealer; but this does not release him from the exemption as to its containing quack-grass or Canada thistle and other noxious weeds. The law does not apply to the sale of seeds grown and sold on his own premises by the farmer. The thought is that if you have the Canada thistle your neighbors know it as well as you do, and if he comes and buys it of you he is not harmed or injured at all, even though he is sold impure seeds, for the reason that he knows it. The exceptions in the state have been framed to meet all these circumstances at the farmer's end of it.

THE PRESIDENT: The next topic on the program is entitled, "The Earning Capacity of an 80-Acre Iowa Farm Devoted to Dairying," by H. G. Van Pelt, Sup't Dairy Farm, Ames, Iowa.

THE EARNING CAPACITY OF AN 80-ACRE IOWA FARM DEVOTED TO DAIRYING.

HUGH G. VAN PELT, AMES, IOWA.

More than once since the subject, "The Earning Capacity of an 80-acre Iowa Farm Devoted to Dairying" was assigned to me I have tried to reason for myself why so small a farm as 80 acres was designated. A farm so small is surely far below the average sized farm of Iowa. Were I to speak regarding the possibilities of a quarter section of Iowa land it could at the present time be made to apply to the condition of a larger number of Iowa farmers; and had I been speaking a decade ago the earning capacity of a half section of land would have been more applicable. Following along this train of thought, the reason for my subject has revealed itself. The population of Iowa has increased in great rapidity, and with this increase has followed closely the increased price of land per acre. These two factors are tending to decrease the size of farms in Iowa. Men whom a quarter of a century ago bought section after section of this fertile (Iowa) prairie at low prices, have farmed and grazed it, oftentimes with extravagant methods, but nevertheless have lived well, saved money, and as time advanced their wealth increased by leaps and bounds by the natural increase in the value of their lands. To the minds of farmers of those times the question of the earning capacity of an 80-acre farm never occurred and neither did a consideration of milking cows except to supply bountifully the family table with milk, cream and butter. Gradually, however, these large farms and estates are being divided, for one cause or another, either among the original owners' descendants, or sold to settle estate affairs, or, as in many instances, the farmer has found in his old age that his sons have chosen some other calling in life and he is left on the old farm alone, with no alternative except to sell a portion of his land from time to time and keep only that which it is possible for him to personally supervise.

On the other hand, it seems a part of human nature for a young man to be eager to own a farm. This is evidenced by business men of every vocation,—lawyers, doctors, bankers, and men of all professions are all striving for the ownership of a piece of land, whether large or small.

If Iowa farm land is their desire, they find that to attain a farm does not mean a few hundred dollars as it did to their fathers, but to own a large farm in Iowa today is to have a fortune.

As a result of the great desire for farms on the part of so many, and the high price per acre, large farms are divided up and the divisions purchased by young men who in most cases are forced to go in debt for a large portion of the cost price. These are the men who are striving to solve the problem and who are asking the question, "What is the earning capacity of an 80-acre Iowa farm," and "To what purpose can it be devoted that will not only increase its earning capacity, but also its yielding value?"

Supposing an 80-acre Iowa farm be devoted to raising grain for the market. This will pay well for a few years, especially if the years are favorable ones for plant growth and the proper methods of cultivation and crop rotation are resorted to. Unless commercial fertilizing is practiced in this case, however, the farm gradually becomes poorer and the farmer's capital gradually decreases until finally in the interest which it returns him annually is not sufficiently large to pay expenses and yield for himself and family a living. Then it is that the farm becomes as many farms in the eastern and southern states, viz.—abandoned and selling for less than the buildings upon them cost.

It is impractical, too, under ordinary conditions to raise and graze feeding cattle on so small a farm, because the owner at once places himself in competition with ranchmen and owners of large tracts of less valuable lands who can with less expense raise a vastly larger number of animals of the same character.

Eliminating these two methods of managing the small farm and those which remain tend more nearly toward intensive and diversified farming. Without doubt if a man is to devote his best efforts to conducting operations on an 80-acre farm he must practice the most intensive methods possible and put in use the lessons which science and practice have taught. He must grow large crops of animal foods on every foot of available ground, feed every pound of it to farm animals of one kind or another and return the barnyard manure thus produced back to the fields,—thus making them richer, more valuable and more productive each year.

Feeding for meat production and feeding for milk production both come under this head, and both may as a rule be made extremely profitable; yet there are a few factors which enter in and warn the proprietor of a limited acreage of high-priced land against borrowing money or spending that which he has on hand for purchasing feeding animals to which to feed the crops he has raised: First, If he chooses to feed hogs and cattle there are opportunities for making large profits unless the hogs contract disease, to which they are very susceptible, or the market price of either or both hogs and cattle drops,—when profits are quickly changed to losses.

Second: If it is sheep that are to be fed there is a chance for the market price of both wool and mutton to drop; and as for feeding horses, few indeed are those who care to accept the hazards which present themselves.

Third: During the fattening period of these animals the percentage of concentrated foods necessary for feeding is very great in comparison to the roughage, while on even a small farm in Iowa or the corn belt a large amount of roughage is necessarily raised. For instance, the daily ration of a fattening steer would be something like 20 pounds of concentrates and 10 pounds of roughage, while for a dairy cow the concentrates would be about 6 to 10 pounds, while the roughage would be from 20 to 25 pounds.

Leaving out of consideration these hazards, however, it must be conceded that raising grain and feeding it to meat producing animals has a distinct advantage in that the owner of an 80-acre farm can do all his own work except during harvest, by farming the land in the summer and feeding the grains and hays—the results of his summer's efforts—during the winter; and little need he be concerned about the scarcity of farm help.

On the other hand, he who wants to be assured of a regular and sure profits from day to day and from year to year, dairy farming is to be recommended, for it has been truly said by one man that the dairyman tears off a coupon from each cow each day. Another says that the cow is the only farm animal a portion of which can be sold each day; and still another that the dairy farmer's harvest comes every day in the year. All these sayings are quite true as well as suggestive.

The true earning capacity of a dairy farm, however, is governed by many condition:

1. Location.
2. Character of cows milked.
3. Care and feed received by the cows.

Upon the location of the farm depends the price received for the produce and this in itself has much to do with the profits, for the farmer who sells his cream to the creamery cannot expect nearly so much for his milk as the one who sells direct to the consumer of milk and cream, and he who is located close to a large city, by putting out a fancy product in the form of either milk, cream or butter has an even great advantage.

Equally as great a difference is brought about by the comparative producing ability of cows, for often there may be found in a herd one cow producing 500 pounds of butter in a year and another producing 200 pounds,—the former making for her owner a large profit and the latter losing him money daily—the same as would a scrub hog or steer, put in the feed lot at a high price. The care and feed the cows receive is another feature of the business which in itself may determine whether or not the earning capacity of the dairy farm is to be large, small or below the expense of operating. Cows must be abundantly fed on foods containing the required constituents for milk production if they in turn are to produce milk largely and profitably. And, too, the feeder must use knowledge in selecting and combining the foods, to which he has access, into a ration which is at once inexpensive, palatable, and stimulating to a large yield of milk and butter fat.

In order that my words may not be termed theoretical or impractical it will be well to consider an 80-acre farm in Iowa that on the start will produce only average crops and is so located that the produce from the cows must be sold at a local creamery at 25 cents per pound for the butter fat, which has been the average price for the past year.

By the uses of silos of large enough capacity for both winter and summer feeding and by the intelligent rotation of crops it will not be at all difficult to keep a 50-cow herd upon the farm beside the horses required to do the work of the farm, providing a small amount of concentrated foods rich in protein is purchased each year. To care for and milk the cows and raise the calves will require the services of four men and a fifth man, with the help at odd times that the four barn men can give him, will be able to haul all feed and manure, keep in repair the fences, etc., and do all the farm work except during harvest and silage making time. Some there are who would have you believe that fewer men could do the work around such an establishment, but my experience has been that one of the best ways to solve the labor problem, which is so vexing at the dairy farm, is to have enough good men drawing good salaries to do extra well every portion of the work without being forced to work such extremely long hours as are usually required. In this way it is easy to keep good, reliable men and a much less number of cows will be required to produce a given amount of milk than though fewer men were kept and the work more carelessly done.

Now if the proprietor and his four men have good land and a good herd of 50 grade cows which can be found and purchased for about $50 apiece, the annual income, expense and profits will be as follows:

Butter fat (350 lbs. per cow), 17,500 lbs at 25c	$4,375.00
45 calves (90 per cent of crop saved) at $5.00 each	225.00
Skim milk (6,125 lbs. per cow) 306,250 lbs. at 25c cwt.	765.62
Total	$5,365.62

Expenses.

4 men at $40 per month	$1,920.00
Extra help in harvesting hay and silage	200.00
Insurance on 50 cows, $1 each and bull $2	52.00
Interested on money invested in cows ($2,500) at 6 per cent	150
Interest on money invested in 1 bull ($100) at 6 per cent	6.00
Interest on money invested in 80 acres of land at $100 per acre at 6 per cent	480.00
Interest on money invested in horses, machinery, etc. ($1,500), at 6 per cent	90.00
Insurance, wear and tear and breakage on same at 10 per cent	150.00
30 ton concentrated protein feed at $23.00	690.00
Total	$3,738.00

Amount received	$5,365.62
Amount expended	3,738.00
Profit	$1,627.62

This is not an extremely large profit, but it should be remembered that very average conditions have been considered, creamery prices allowed for only a fairly large production and only veal prices allowed for calves. Although 25 cents may be considered a large price for skim milk, it would be worth a dollar per hundred were it fed to pure bred calves or hogs. If the farmer himself wished to work quite hard it would be possible to get along with one less man and thus add another $480 to his profits annually; or, if as is the rule in theoretical farming, the manure and calves are allowed to pay for the hired help, then the income would be $5,140.62, the expense $1,818, and the net profit $3,322.62.

Now let us presume that the farm is located close enough to a city so that the product can be marketed in the form of 30 per cent cream at 3 cents per point for butter fat, which is quite a common wholesale price, and that his cows are pure bred and producing the same as the grades except that the calves would be worth $25 when they reached a salable age of six or eight weeks.

30 per cent cream (145 gal. per cow) 7,250 gals. at 90c	$6,525.00
45 calves (90 per cent of crop saved) at $25 each	1,125.00
Skim milk (after feeding calves 1-2) 145,800 lbs. at 25c	364.50
Total income	$8,014.50

4 men at $40 per month	$1,920.00
Extra help in making hay and silage	200.00
Insurance on cows at $2.00 each	100.00
Insurance on 1 bull at $2	2.00
Interest on money invested in cows ($5,000) at 6 per cent	300.00
Interest on money in bull ($100) at 6 per cent	6.00
Interest on 80 acres at $200 per acre at 6 per cent	960.00
Interest on money invested in horses, machinery, etc. ($1,500), at 6 per cent	90.00
Wear and tear, insurance and breakage on same at 10 per cent	150.00
30 ton concentrated protein feed at $23	690.00
Total	$4,418.00

Total income	$8,014.50
Total expenses	4,418.00
Total profit	$3,596.50

Figuring in this manner the profits are more than doubled and the dairy farmer has for himself $3,596.50, with only his taxes and insurance on the farm buildings to pay. And these figures are reasonable except that the income figured at much lower prices than many breeders are at the present time receiving for their cream, calves and skim milk, but I have tried to keep so far within the bounds of reason, that my audience may not say—as I really expect said—"theoretical—impractical."

In conclusion I wish to say that in my opinion the earning capacity of an 80-acre farm devoted to dairying as I have figured it is only well within reason for each instance, and that which can easily and surely be accomplished year after year by any careful and intelligent dairy farmer. As for the *possibilities* of an 80-acre farm devoted to dairying, none of us have any conception of them. Only a practical demonstration could determine this truly, yet I do not doubt in the least that these possibly profits on either of the hypothetical farms I have mentioned could be made to reach three times the figures I have set forth.

I am led to believe this by the fact that Mr. Detrich, a Pennsylvania minister, took up the management of an old 15-acre farm that was so run down and worn out that it would not support well the two cows and one horse that were kept upon it. Mr. Detrich converted it into a dairy farm and the first year lacked $46 of paying expenses, but in the six years that followed he cleared up a $7,200 mortgage. So greatly had the land been improved that at the end of this time 30 head of stock, 17 of which were milk cows and two were horses, were being provided with all the roughage they needed and 3,300 tons of hay were sold. The outlay for concentrated feeds was about $625 a year. It has been estimated that this farm of 15 acres produces a revenue of about $3,000, or $200 per acre, annually. Doing one-half as well on good Iowa land as has been done on worn out and reclaimed Pennsylvanian land, 80 acres would produce a revenue of $8,000.

Up in Michigan is another farm, according to the Department of Agriculture, containing 120 acres, owned by Mr. J. N. Neal, whose total investment in the farm and his share of the dairy herd and farm equipment is $12,500. He receives annually $1,500, or 12 per cent on his money invested and gives the farm management no attention whatever. Mr. C. J. Augerine, the manager, who owns half the herd and the farm implements also received $1,500 as his share, so the 120-acre tenant farm returns annually $3,000 clear profit.

THE PRESIDENT: We have a little time, if any one wishes to ask any questions, I am sure the writer of the paper would be glad to answer them.

QUESTION: What difference would it make if the farmer would make his own butter?

MR. VAN PELT: That would depend on whether he was making his own butter near a large city. If he were, he could on a high class product get a premium of 10 to 15 cents per pound. It is not exceptional for dairy farmers to have yearly contracts in large cities to furnish butter from 35 to 40 cents a pound. In New York State, I think, it is not an exception to have the wholesale price 50 cents per pound. It would be simply owing to the prices it were possible to obtain for it.

QUESTION: How many acres of corn did you raise to go into this silage?

MR. VAN PELT: As I said before, in order to gain a profit or keep many cows on so small a farm, it would be necessary to soil it the year around. In calculating my figures, I allowed ten acres for pasture for the cows; then in order to feed thirty pounds of silage, will require about 250 tons of silage a year. The corn which we raise as a rule will run twelve to fifteen tons of silage per acre. But with so many cows as 50 on so small acreage of ground, where the manure is returned to the farm each year, it will be possible to raise a good deal larger tonnage. We know of some who are raising 25 tons of silage to the acre. Figuring 25 tons, you see it only takes 10 acres to supply the 250 tons. Then I also figured it was possible to raise most of the corn in the way of concentrates, by balancing up this corn with the 30 tons of concentrated protein feeds, and also supplying protein with the clover necessarily used in crop rotation, and also having from ten to fifteen tons of alfalfa hay, it would be possible to supply not only the roughage, but a balanced ration.

QUESTION: Do you expect to raise it on the average Iowa farm?

MR. VAN PELT: I would not expect to raise it on the average Iowa farm.

QUESTION: How would you cure it?

MR. VAN PELT: That is quite a subject for the Iowa farmer, because of climatic conditions. There is a way, however, it can be cured, even in seasons, such as we have had the past year. By cutting in the morning and allowing it to cure until noon or slightly afternoon, then shocking it up, allowing it to remain under that cover for a week or ten days. I am satisfied there is no better way on earth to make clover hay or alfalfa hay. The finest hay I ever fed or saw was alfalfa hay raised in Colorado and cured by this same method—cut in the morning and in the afternoon cocked up, and then after a week it was baled and shipped east; when it was taken out of the bale it was just as green and nice as could be.

QUESTION: On the average farm, would it be economical to put that expense on curing this hay?

MR. VAN PELT: Not on an average farm; but where a man has devoted all his efforts on such a farm, in the manner I have indicated, it will be possible for him to put up his hay in that way.

QUESTION: Will you please repeat the amount of profits under the two methods you speak of?

MR. VAN PELT: The profits in the first instance were $1,627.62; in the second instance, the profits were $3,596.50.

QUESTION: How would you first obtain that supply of cows suitable for such an operation; how would you keep up your supply after you started?

MR. VAN PELT: That is a very important question, also quite a perplexing question. It is much easier to select good cows from a herd of pure bred cattle than it is of grade cattle. If one wishes to stock up his farm with grade cows, he has quite a difficult task, because in many instances it is difficult for him to determine the value of these cows; it necessitates traveling around. One way is to buy them on the market. This fall I was on the Chicago market. I saw there a good number of dairy cows, as one would judge them, simply seeing them. At the same time these cows are quite expensive. Probably a better way would be to simply go through the country and pick them up here and there. As a matter of fact, in certain vicinities it is possible to buy exceedingly good grade cows. For instance, you go into the vicinity of a breeder of pure bred cows. He has sold to the neighborhood his bulls and bred their cows for them. I know a vicinity where a great many graded cows sold for $100 apiece. Then there are different methods of keeping up a herd. The dairymen in the Elgin district, close to Chicago, buy cows somewhat of a beefy nature; they milk them until they are no longer profitable, and they are fattened for the market and sold at beef prices. Then their cows that are springers, or fresh are put in the place of those, and this is the manner in which a great many progressive dairymen are doing. But the time for this is almost past, because, as I said before, these grade cows are selling for such enormous prices. To keep up a herd of pure bred sires, the heifer calves that are dropped on the farm, are of much merit, so that they can be raised much more cheaply than they can be purchased. In this way the owner of them would at the same time know what their ancestry has been and what they have done. In this manner it is possible for the perpetuator of the farm to reject the calves of poor cows.

QUESTION: If you raised the calves, wouldn't you have to make allowance for raising them until they began to produce, and you would have to make allowance for the young cows not producing with a fully developed cow?

MR. VAN PELT: Yes, that is something that needs to be taken into consideration. It struck me very forcible in figuring out the earning capacity of an 80-acre farm. Of course, after the calves get past the age of six months—at the same time the calves do not need as much heavy feeding, and they can be running in the pasture in the summer time. It would be possible to raise even more silage. As I said before, this is a line to itself. We would also need to figure the profits as well as the cost of raising.

QUESTION: Of course, if you wanted to keep 50 cows up, wouldn't you have from 15 to 25 young stuff, from calves to 3 years old?

MR. VAN PELT: Yes, sir.

QUESTION: Could you keep so many cows, if you kept them on this 80?

MR. VAN PELT: No; unless you had side-lines, you would have to have a larger farm.

QUESTION: Have you ever tried the sugar cane for silage?

MR. VAN PELT: Personally I never have. Those who have tried do not like it as well as corn, for the reason that it forms more lactic acid, and is not so palatable as corn.

QUESTION: Have you tried sugar cane in its raw state?

MR. VAN PELT: I have fed some. It has this one thing to recommend it, that it is very palatable when put up in the form of hay. That is another thing regarding the two methods of curing: it can be shocked for fodder, and corn should be put in the silage. Any animal needs a certain amount of dried matter before it is possible to get it out of the silo. So that fed in the raw state, sugar cane is quite valuable as a food. But the farmers say that sorghum is quite hard upon the land.

QUESTION: I don't know whether I got a clear understanding. I had the impression that 50 cows was the full limit of the capacity of an 80-acre farm; you spoke of the milk being worth 25 cents. Did you intend that the other feed should be purchased or produced outside of that farm; that the farm doesn't produce feed for the pigs and calves?

MR. VAN PELT: Yes, that is true. I figured for the calves to be sold at weaning time.

QUESTION: And the feed outside of the milk, should have to be purchased outside of the product of the farm?

Mr. Van Pelt: Yes, sir. Regarding the amount of cows that could be kept there. I did not make a direct statement, because, really the possibilities of an 80-acre farm are, as I believe, greatly larger than I made them. I think that 50 could be kept very easily where concentrated foods are purchased.

Question: What provision would you make to replace those cows?

Mr. Van Pelt: As I said before, they can be replaced in different ways. He can raise the calves on some other place, or else when his cows go dry, he can sell them and buy more.

Question: In your figures did you take that into account?

Mr. Van Pelt: Yes, I took that into account to the extent that I charged up interest against the cows. I charged one dollar per year insurance against the cow; that probably wouldn't cover more than accidents or deaths; but, as a rule, if one wanted to sell those cows at the end of the period of lactation, it would be possible for him to replace them for the prices received for them. There might necessarily need to be some provision made, however, for other expenses.

A Member: It is my opinion, in replacing these cows, that you haven't taken nearly enough into account to replace them—to either raise the calves, or go out and sell those cows and rebuy others. That is the most expensive thing in the whole business. If you are going to raise the calves, you don't get as good a calf as you got a cow, only occasionally, and it takes three or four or five years to get them ready to milk.

Mr. Van Pelt: As a rule breeders try hard to improve each generation. As you say, there are a great many disappointments, a great many calves we think should be most excellent milkers, when they come at their milking age, they are not what we expected. But it isn't necessary to wait four or five years on a calf to become a profitable milker. If they are profitable at all, they should be profitable at 2½ to 3 years old.

Mr. Reeves: While they are a source of profit, they wouldn't come up to the mature cow; you would have to cut your figures considerable A three-year old cow is not much better than a two-year old.

Mr. Van Pelt: Heifers should produce, and in many instances do produce more butter fat than I have estimated. Really I consider the average amount of butter produced by the Iowa cow is much below what I stated. We have a heifer at the College, barely two years old and that heifer is this year going to make 350 pounds of butter fat, and really, her care is ordinary, for the reason that we have not been prepared to give her the best attention. Pure bred cows under the same conditions are going to make between 400 and 500 pounds. There is that one thing—there might necessarily be some expense necessitated in exchanging these cows for fresh ones; but there are the two methods, the manager can either sell his calves or exchange the dry cows for fresh ones. It is possible that in some instances he would have to pay more for the fresh cow than he gets for the dry. In many instances it will be possible for him to sell that cow for even more than necessary.

MR. REEVES: I have found, in my experience, it is quite a problem to get anywhere near as much for the worn out cow; some of them, when they are worn out, they are all gone.

MR. VAN PELT: Of course, a person wouldn't dare wear his cows out that way. If she were only a five-year-old cow, then he couldn't expect a second calf; he would only have the first calf, providing he had a springer. Following out that system, she is simply milked as long as she is profitable for the one period of lactation; then she is sold on the market.

QUESTION: Would you recommend selling a 350-pound cow?

MR. VAN PELT: No. Some provision would necessarily be made for raising those calves; but these calves would need to be raised on some other farm, unless the 80-acre farm was farmed more intensely than I have figured. So that if you wish to raise those calves, it would be possible to go and raise them on the roughage, and the profits could remain the same, because when you raise these calves, and she reaches the salable age, she is worth all she has cost. In other words, if you sell her at weaning time for $5, that is all the value she is to you at that time. But if you put more money into her and grow her into a mature cow, and she is worth more money; you have got a profit there.

A MEMBER: I think in making an estimate on an 80-acre farm, you should raise those calves yourself and take out enough when those are old, and sell them as canners.

MR. VAN PELT: That simply would be another way of getting at the figures.

QUESTION: How about the milking machines?

MR. VAN PELT: The milking machine is still in the experimental stage. The best man on that subject is probably Mr. Scribner, of Wisconsin. His opinion is where heifers are broke with the first calf, they do reasonably well, but in cows who have formed the habit of being milked by hand, they do not respond readily to the milking machine.

QUESTION: In your figures, what is the percentage of butter fat?

MR. VAN PELT: I took five per cent.

QUESTION: Can you find a creamery that will give you a five per cent test?

MR. VAN PELT: I can find plenty of cows that give five per cent milk.

THE PRESIDENT: Our next subject is entitled, "Sugar Beet Industry in Iowa," by Earl C. Moore, Secretary Iowa Sugar Factory, Waverly, Iowa.

SUGAR BEET INDUSTRY IN IOWA.

E. C. MOORE, WAVERLY, IOWA.

I infer that the invitation extended to the Iowa Sugar Co. that their representative meet with the State Agricultural Society at Des Moines was given rather with a view of learning something of the manufacture of sugar than the question of beet culture with which I assume every one of you is more or less familiar.

The important feature in the success of beet sugar manufacture is the question of profit to the farmer, and the manufacturer who does not inform himself as to the conditions of agriculture in the immediate locality of his factory and who does not co-operate with the farmer in every step is not likely to make a success of his factory.

You will understand that the success of the beet sugar industry is so interwoven with the farmers profits that the factory can not exist unless it develops that the growing of beets is profitable to the farmer.

It is impossible in the short time alotted to give you more than the outlines of the possibilities of beet culture in Iowa and we must to a certain extent depend on the experience of other states as the factory established at Waverly has not yet been demonstrated as an entire success. That is, one year's experience is not sufficient for a grower to know whether or not he wants to continue the culture. From the side of the investor we have demonstrated our faith in the ultimate outcome by providing the cash for the construction of the factory.

We believe that you have the fertility of soil, the average favorable amount of precipitation, and most necessary the sunshine and cool nights during the maturing season. It must not be forgotten, however, that a crop brings to the farmer $60 to $125 per acre necessarily demands more attention than one that brings $8 to $15, and the most serious obstacle to the development of the industry is, no doubt, the extreme scarcity of the farm laborer.

The experience of sugar factories in other states has demonstrated beyond contradiction that the establishment of the sugar industry attracts farm labor which is generally available for other crops than sugar beets. In general these are employes of the packing house, the heads of which families are employed during the winter in the cities and gravitate to the fields in search of employment for themselves and families during the summer.

You will understand that in the growing of beets there is certain hand labor required. First the beets are drilled in rows from 20 to 24 inches apart at the option of the grower. The drill used plants four rows at a time using from 15 to 20 pounds of seed per acre. Upon their development to the fourth leaf they are blocked and thinned so that one plant stands by itself about 8 or 10 inches apart in each row. In the meantime a one horse cultivator cultivating two rows at a time is used to keep down the weeds between the rows. The cultivator is used until the leaves lap in the rows. After the blocking and thinning is done the field is hoed and later in the season is gone over a second time with the hoe, killing the weeds that are left. After the beets are matured a beet lifter lifts them from the ground and the hand labor contractor tops the beets, throws them in piles and covers them with the tops and they are ready to deliver to the factory. When properly covered, ordinary frosts do not hurt the beets and thousands of tons of frozen beets are made into sugar every year.

You will understand that between these operations the labor contractor has considerable time when, as practice shows, he is engaged by the farmer to assist in other work. Often these families locate in the immediate vicinity of the factory. Of some 60 families brought to the Waverly factory this year about 20 per cent have become permanent residents, and the tendency is, as I have intimated, the gradual drifting to the beet section of the necessary farm labor. I might say that this hand labor we contract for $20 per acre to those knowing a sufficient number of acres to warrant the employment of a family. I naturally drift toward the cultivation of the beet, but I suppose you want to hear something about the sugar itself.

"Sugar is one of the most recently acquired, the most rapidly increasing and one of the most important articles of diet. From its earliest mention until the time of Queen Elizabeth sugar was used only in the arts and sciences and was sold at about $1 per pound. The four decades following the issuance of a decree by the first Napoleon appropriating one million francs for experimental work in connection with the development of the sugar beet were only important in increasing the quality, for in the year 1840 95 per cent of the world's sugar was made from cane." About one million tons were used in 1840. Since 1840 the increase in consumption has amounted to 150 per cent per decade and now amounts to 12,000,000 tons, 60 per cent of which comes from beets, and the people of the world annually expend $1,250,000,000 for sugar.

Europe has 1,500 sugar factories, scattered over all but two European nations.

In 1864 the United States consumed 18 pounds per capita, while last year our consumption was 76 pounds, as compared to 90 pounds in Great Britain and 7 pounds in Italy.

In 1888 the production of beet sugar in the United States reached 1,000 tons for the first time in our history. When the present tariff bill was enacted ten years ago we had six beet sugar factories in the United States which produced 40,000 tons of beet sugar. Last year we had 63 factories in operation and produced 483,612 tons of sugar surpassing for the first time the cane sugar output.

Last year the American farmer received nearly $25,000,000 as his share of the beet crop and as much more went to laborers and other employees of the factories, the coal mines, the railroads, the lime kilns and numerous other classes of American industries. Our Agricultural Department now classes it as the seventh most important agricultural product.

The retail price of sugar in New York averages cheaper than the retail prices in Berlin, Paris, Vienna or St. Petersburg, the commercial centers of the world's greatest beet sugar producing countries.

If by fostering this great industry, an unjust burden has been laid upon any citizen of any state in the union, the figures do not show it. The state of Iowa will consume the product of sixteen factories such as we have at Waverly, so you will understand the market is at our door.

Factories in successful operation will produce about 200 lbs. of sugar to each ton of beets, and the state of Iowa with its 2,225,000 people, requires 85,000 tons of sugar annually, 850,000 tons of beets or the product of 85,000 acres, figuring 10 tons as an average, although the average should be considerable more than that. The state of Michigan in 1906 exceeded 12 tons average. Over 110,000 acres were grown by 27,000 farmers.

Speaking of Michigan, the industry in that state was started in 1897, when one factory was built at Bay City with a slicing capacity of 500 tons daily, exactly the same capacity as the one we have built at Waverly.

At this present time there are sixteen factories in active and successful operation, and do the farmers of Iowa admit that the land in Michigan is more fertile, that its sunshine is more bright, or that its farmers are more intelligent than those of Iowa, or are the farmers of Iowa content with smaller profits, or do they believe they can pay the interest on present values of land by growing oats and corn? My faith is that eventually, in order for the fertile acres of Iowa to produce for their owners their full fruition, they must resort to more intense cultivation and a more careful tillage and more particularly a rotation of crops.

To return to the manufacture of sugar. I have already shown you that the need exists and that the opportunity is here. The factory is the medium whereby the consumer is placed in more direct communication with the producer. In one door it takes the beets from the farmer, paying him $5.00 per ton, it works up the ton of beets through the factory and produces sugar which it sells to the grocer, receiving approximately $9.00. Between these two figures they must pay for the coal, for the cooperage or package in which the sugar is placed, the lime rock and the coke, they must satisfy the labor that manipulates the beets, they must pay for the wear and tear on their machinery, with all its incidentals, and they must at the same time maintain an intelligent field force who are intended to assist the farmer in the proper cultivation of his beets. It will not be necessary to continue to instruct the farmer, as two or three years' cultivation will put them in possession of all we know about the cultivation.

In addition to the hand labor which I have already specified, the proper cultivation of beets demands, first, the preparation of the ground and the seeding, sufficient cultivation through the growing season so that the subjection of the weeds is assured, the lifting of the roots after they are matured with a beet lifter, and the hauling of the beets to the sheds or cars. It is estimated that $30 per acre, which includes the contract hand labor, should cover the entire cost of cultivation and hauling, figuring the latter at an extreme of 50 cents per ton. So that a crop of six tons will cover all the necessary expenses of raising an acre of beets. The seed is furnished by the factory at cost, 10 cents per lb. The average receipts for the farmer in Michigan is $48 per acre, while in Colorado it is $75 per acre.

After the beets are placed in the sheds they are floated in flumes to the factory, where they are sliced into long, thin cossetts, when they are placed in the diffusion battery and the sugar extracted from the slices. The resulting juice is treated with milk of lime and carbonic acid gas to eliminate the solid impurities, after which the production of sugar simply means the elimination of the water by evaporation. There are, of course, many steps in the process necessary to purify the juice, eliminating all salts and pectic substances.

It is popularly supposed that cane sugar is in some way superior to beet sugar, but I venture to say there is no one who by any process either chemical or otherwise, can demonstrate any difference. Sugar is a chemical product of a definite crystallization and there is no difference whatever in the cane and beet sugars, and they are sold in the market side by side.

After the juice is extracted from the cossetts the residuum becomes a valuable stock food, rich in protein, and when fed with other feed rations gives results that can not be obtained with any other feed in the same space of time. Milch cows will produce more and better milk and stock can be fattened with one-third less the amount of grain.

The Iowa farmer is faced with a weed condition that is extremely dangerous. Long continued cultivation of corn which permits the growth and ripening of weeds in the hills after the crop is laid by has filled the soil with seeds of all sorts of noxious vegetation. The cultivation of beets is one of the steps necessary to eliminate this condition, and I think you will agree with me that any steps in this direction are proper for the farmer to consider. I understand that some farmers have been reduced to the point of three years cultivation of fields in order to destroy quack-grass without any return whatever.

The German Agricultural Society has made a study of the cultivation of beets covering fifty years and in one of their recent reports they make the statement that if a farmer received no returns whatever for his beets that the cultivation given the beets benefits the land to an extent that the increase in succeeding crops will more than offset the cultivation. They state that the use of the sugar beet as a rotating crop increases the acreage production of wheat 24 per cent, barley 25 per cent, rye 15 per cent, peas 86 per cent and potatoes 102 per cent, oats 30 per cent.

Beets require a moderately fertile soil. They can not be grown on light sandy ridges, nor in peat, nor in sour bottom land. The plant is very hardy and is not materially affected by hailstorms, drouth, nor heavy rains if the drainage is such that the land is not soured.

The price is fixed and is not affected by too productive a year and it is the only crop grown by the farmer which has an assured market price before the seed goes in the ground. It is not necessary to construct cribs or barns to store the crop. In the event of a heavy surplus it may be necesesary to pit, in which case the factories allow the farmer for his extra work.

Freight rates have been made by the railroads so that shipments can be profitably made to factories within a radius of 150 miles, the factories generally assuming all freight in excess of 50 cents per ton.

The cost of construction of factories approximates $100.000 for each 100 tons slicing capacity, with a minimum of $500,000.

I have tried to give you a general idea of the method of cultivation, as well as the maiufacture of sugar, and I will be glad to explain any one of the items further or to answer any questions pertaining to the business.

THE PRESIDENT: The paper is open for discussion or any questions that any one may wish to ask.

QUESTION: Do I understand you furnish the labor or hands?

MR. MOORE: We furnish the hands to the farmer where we can get a family; the contractor will furnish that labor for $20 per acre. We had no trouble about getting help. The reason for that is this: take these men working in the packing houses, take it in the summer, their children twelve to fifteen years of age have as much of an earning capacity as a woman. We have had several families at Waverly during the summer, the men of which families during the past summer earned enough to support them, and they went back to Omaha with from $350 to $400, as the wages of that family. That is why we are able to get this help, because, as you see, they have a chance to earn more money than in any other way. The men and women generally do the blocking with the hoe, and the children do the thinning; they are small and active and can get over the ground very readily.

QUESTION: Do I understand you induce a farmer to put in as much as 25 acres?

MR. MOORE: We do not advise that. There are cases where a man has exceptionally good ground, and he will put in 25 acres; in that case, we furnish the help.

QUESTION: Do you agree to send a family and pay the room rent?

MR. MOORE: As a general thing, the home they live in is generally furnished by the grower. It is through the warm season, and you don't have to fight the cold. We have had no trouble in finding houses to put these people into.

QUESTION: Do they ever live in tents?

MR. MOORE: Sometimes they do.

QUESTION: What kind of families do you get?

MR. MOORE: We had some good German families we got. For several years we have been taking this help to Michigan. For the last few years there has been quite an emigration of Russians into Michigan, and for that reason we have the pick of the families; we get the best families. As a general thing a farmer will take an acre or two of beets. We have had any number of farmers tell us they were able to handle one or two or three acres, and it does not interfere with their other work. The beet growers get the pulp without any extra charge. That makes a very fine stock food, the farmer paying the freight.

QUESTION: Does it come out dry?

MR. MOORE: When it comes out there is a moisture in it, but it can be covered up, and with the weather we have, it will keep all through the winter. There is more or less moisture to it; it does not become perfectly dry. It might freeze on the outside on the pile; the cattle will eat it, even in a frozen state.

PROF. CURTISS: About what acreage have you now?

MR. MOORE: We figured on having 5,000 acres. We failed on that this year, it having been a wet season. In some places the weeds got so bad they outgrew the beets. The beet is a very hardy plant.

QUESTION: You asked the question as to whether the fertile Iowa soil couldn't produce more than the sandy soil and ridges of Michigan; isn't an admixture of sand the most favorable?

MR. MOORE: Not particularly. Secretary Wilson claims we could produce 20 tons of beets. We have had a great faith in Iowa, and have thought if Michigan could produce beets, Iowa certainly could, because we have claimed all the time our soil was richer and better.

QUESTION: How have they turned out?

MR. MOORE: We had beets this year that approached close to $85 per acre. We have had 22 and 23-acre pieces that went better than $42. Last year the farmers were told to plow deep, the ordinary plowing has been five to six inches, and some of the farmers lost their crops last year on that account, although we had farmers last year who raised in 10-acre fields beets that averaged better than 17 tons. We have had two or three acre fields that went 22 to 24 tons.

QUESTION: Wouldn't that indicate that a man who has a little piece would take the better care of his beets?

MR. MOORE: You take it, where a small piece is taken in connection with the other farm work, it gets better care. Where a man has a big piece and the rain comes on to him, the piece gets a little too big for him, whereas in a smaller piece they are able to take care of it and get it cleaned up. The trouble this year was the rains came on in July and where they had large pieces, they became discouraged.

A MEMBER: Can you tell what I have raised on a small patch of sugar beets. I remember the last crop I raised I had ¼ acre. I took a small sled and marked it out; it was never thinned. I cultivated it with a corn plow three times, and pulled out of it three 26-inch boxes.

MR. MOORE: You planted them as wide as corn, but they wasn't thinned at all?

MR. REEVES: That would be about five tons. I have grown sugar beets for the last ten years. I started in ten years ago with the idea of getting a factory at Waverly, and that it was a practical thing for the farmer. On the start it is somewhat difficult; but when you get along, probably five acres will be what the average farmer will get along with. You can hire the children from the town, as they are loose from school about the time they are needed, and it is a good thing to set them to work; the little chaps will earn a dollar a day. All the good to the community cannot be figured by the profit the farmer gets from the beets, because more than that amount has gone into the pockets of the laborers. The children wouldn't be doing anything except running the streets or up and down the river and fields, committing depredations. If you have an industry like this in your community, they are learning something useful; it makes them more manly and womanly. You have noticed this sample of sugar here—I don't know whether any of my beets went into that or not—I have heard it said that beet sugar was inferior to cane sugar. One of the things that have been charged against it is that it wouldn't make jell; you couldn't make jell by using beet sugar. Here is a sample made from apples last Friday; my folks undertook to make a little of it to illustrate whether it will make jell. Now, you know, it takes some time to harden jell. I would like to have you make an examination of these samples of beet sugar. From an examination of this jell you will find that it can be made from beet sugar; in fact it is equal in every respect to the cane sugar.

I spoke a moment ago about deep plowing. The people from Michigan told us that the ground should be plowed deep, because they had a clay subsoil, and the reason we fell down the first year on a number of pieces was on account of taking that advice. Our soil here is loose enough so we don't need to go as deep as they do.

Adjurnment taken until 2 o'clock P.M.

PROCEEDINGS

OF THE

Joint Session of the Annual State Farmers' Institute and Corn Belt Meat Producers Association

HELD AT

Savery Convention Room at the Savery Hotel, Des Moines,
Iowa, on December 10, 1907, beginning at
2 o'clock, P. M.

The meeting was called to order by President Sykes of the Corn Belt Meat Producers' Association.

THE PRESIDENT: The time has arrived for us to begin our program. I suppose you all understand that this is a joint session of the State Department of Agriculture and the Corn Belt Meat Producers' Association this afternoon.

The first subject is entitled, "Sheep Husbandry on High Priced Farm Lands," by Geo. H. McKerrow, President of the Wisconsin State Board of Agriculture. I desire to state that Mr. McKerrow was unable to get here, but wrote us, that he would furnish a substitute better than himself, in the form of his son, Wm. A. McKerrow, who has charge of the sheep upon their farm.

SHEEP HUSBANDRY ON HIGH PRICED FARM LANDS.

WM. A. Mc KERROW, PEWAUKEE, WISCONSIN.

Mr. President and Gentlemen of the Iowa State Farmers' Institute and Corn Belt Meat Producers' Association: It is quite a privilege for me to come here and talk to such a noble body of men, gathered together from all over the State of Iowa. We know that Iowa is noted for the greatness of her beef and pork producing industry, but the sheep end of it seems to be, possibly, slighted. We know, however, that the sheep part is increasing and that Iowa will be a great sheep country. In fact, Southern Iowa, I believe, is now increasing her flocks and the value of her flocks on high priced land —we must increase the value of flocks rather than increase the numbers.

The sheep husbandry of the United States has made the greatest advance of any of the live stock industries the past ten years. And why shouldn't it? That we are destined to become the greatest sheep raising and mutton consuming country in the world, is as safe a prediction, as that we are rapidly and surely becoming one of the richest and most powerful nations on the globe. We have territory enough to sustain half the sheep in the world without unbalancing our system of mixed husbandry. Within our great commonwealth we have varied conditions of climate and forage growth for any and every known breed of sheep.

If England can furnish environment enough to sustain twenty-five or thirty distinct breeds, our great country should produce every known breed in the world.

We know we have the resources, but what of the results. We must give diligent thought to selection, care and mating of our flocks, in order to produce the most mutton with the least cost.

Let us compare the cost of production of mutton with beef—and this I have from a talk given by Prof. Curtiss four or five years ago, from an experiment carried on at your station, and I think the best comparison we have from any college, and the Ames College is one of the leading colleges in the Union. From this experiment, carried on at Ames, we have the following:

One hundred and nine sheep were fed ninety days, and given 34,501 pounds of feed, grain and hay. They fed 34,501 pounds of feed and produced 4678 pounds of mutton, giving us the ratio of 1 :: 1 31-100. For every pound of mutton produced, 1.31 pounds of feed was consumed, at a cost of 2.93 cents per pound of feed, at market value, which was a little more than farmers would realize, This experiment included representatives from each breed of sheep.

The best work they could obtain the same winter with cattle, was with a bunch of grade Hereford steers coming two years old, fed on similar food rations. In that experiment it required 8.9 pounds of this feed to produce one pound of beef, covering a period of one year's feeding.

It is estimated the average amount of feed to produce one pound of beef at the different experiment stations and similar places where experiments have been conducted in the United States is 10.25 pounds of feed. At the difference in price of mutton and beef, we would figure a greater profit in mutton production than beef.

Now, what is essential in mutton production? Let us consider the feeding of the flock. To have a flock do well and produce the best class of mutton, a variety of food is necessary, technically speaking, a balanced ration. All meat producers know that, in order to get the best results they must have a balanced ration. For a balanced ration for sheep in the winter season—the season of dry foods—we should have some succulence. Such foods as roots, ensilage, or something that will take their place is necessary.

Economical feeding is very important. There is no class of grain or fodder cheaper than corn or corn fodder. They can be used very well in making up a balanced ration, although we must balance up with protein and succulent feeds.

We can make mutton very cheap in the fall of the year by growing root crops and rape, and it is of especial importance in dry weather.

In growing your animals, there is one thing we should bear in mind, and that is, to feed bone and muscle forming foods. In the early life of the animal it should be so fed that bone and muscle development is certain, or you will never get a perfectly well developed animal. We should watch the lambs to see that they are kept growing.

In order to get the best results from your lamb crop, it is necessary to commence a long time before they are born, that is, you want the mother fat when they are born, and a good strong flow of milk, which should be kept up through the season. Ewes are great milkers, far exceeding the milking capacity of the cow, and much richer. Remember, and feed for milk production, by using rich protein feeds, such as clover, linseed cake, alfalfa and bran—corn will not answer at this period.

About the time a lamb is a week old it is looking around for something to eat. Then give it a chance; make a lamb creep, consisting of a slatted gate, making a small enclosure, in a corner of your barn or yard for the lambs to go into at will. Feed them a little oats and bran; clean your trough out at least once a day, and put in fresh feed; construct a small hay rack in the creep and feed the brightest and best hay you have.

One of the greatest enemies the sheepmen has in raising mutton, is the internal parasites—stomach, tape and other worms.

This trouble can be prevented rather than cured. We use the hurdles, a system carried on almost exclusively in Great Britain, with excellent results. By using this method you have your lambs on fresh feed every day. They do not follow the ewes and become infested. If you do not use hurdles, keep your lambs on fresh pasture—clover if possible—and be prepared for the dry season. This season is when the rape crop is very important. Rape comes up in great wealth, and will make mutton for nothing. You can sow it in your corn fields at the last cultivation; this will be ready by the first of September or whenever your corn is harvested. Perhaps the best method for an Iowa farmer to follow would be to plow up a piece of sod after haying and sow rape. Don't miss sowing rape; it is your cheapest and best fall feed.

Wean your lambs and keep them doing well; put them on your best clover pasture. Don't have them follow older sheep that might be infected with disease.

One thing I wish to speak of and that is the breeding of the flock. Good breeders all recognize the value of a sire in building up a herd or flock. Our western breeders are willing to buy a carload of good rams (pure bred) with breeding that will tell on their flocks, rather than use a scrub sire at one-fourth the cost. People speak of the sire as half the flock. This is true when both sire and dam are equally well bred; pure bred and strongly bred, so they will have an equal influence on the offspring. But when one side is scrub or grade, the saying is not true, and from this source the average farmer must start his herd, or flock. If the female side of the flock is scrub, then the pure bred sire becomes all the flock, so far as blood lines of improvement are concerned. This is considering the first cross.

In the second cross, he becomes a little less than all, and as the grade of the flock rises, the sire becomes less and less, until when graded up to the practical standard of pure bred, then your sire gets to be half of the flock. Therefore, the selection of the sire is of the greatest importance to the flock. Select according to your demand, but, by all means select one with great constitutional vigor and as near correct mutton conformation as possible, and then get breed type. I should say first of all, select for mutton conformation and breeding.

The care of the sire at the breeding season is important. See that he is not going back in condition while in service.

In conclusion I might say a little more as to feed. We in Wisconsin and the people in the middle West are troubled with the intestinal parasites. Everybody is trying to find a remedy. We, as I spoke about, use hurdles with our flock and give the lambs fresh pastures every day. We let the ewes follow the following day where the lambs ran the first day. Then we wean as early as possible. Our lambs are dropped in February mostly, some in March; we wean along about the middle of July; then we turn the lambs on either rape or fresh clover pasture. If farmers would do that, I do not think they would have any trouble with parasites. The trouble is that they will insist in pasturing their old blue grass, old sod pastures. Now, if there are any questions, I will be pleased to try to answer them.

THE PRESIDENT: You will understand this subject is now open for discussion or questions any one may desire to ask.

QUESTION: I would like to ask if there is any danger of lambs in clover, bloating or scouring?

MR. MCKERROW: Of course, we pasture our lambs on clover; we run the hurdles on clover too. If your clover is real young and short, there isn't much danger of scouring your lambs. I will say, as soon as we wean our lambs we drench them with what is called *Santovin*, prepared by Stephen Pettifus & Sons, Mahusbury, England. We havn't lost any at all, from any trouble whatever. I think it acts as a good preventive from disease.

QUESTION: Have you had any experience with tobacco and salt?

MR. MCKERROW: No, we havn't used it. We have used nearly every other preparation, I guess.

QUESTION: What would you suggest as a preventive from these worm?

MR. MCKERROW: As I have just mentioned, we have tried several remedies. The most successful, I should say, was drenching with *Santovin*.

THE PRESIDENT: There being nothing further, we will proceed with the next subject entitled, "Buying, Feeding and Selling the Steer for Profit," by Prof. John G. Emboden, of Decatur, Ill. We are glad to be able to state we have Prof. Emboden with us this afternoon. I believe most of our farmers have read of some of his work in the different Agricultural papers over the country, and I take pleasure in introducing Prof. Emboden to you at this time.

BUYING, FEEDING AND SELLING THE STEER FOR PROFIT.

JOHN G. EMBODEN, DECATUR, ILL.

Mr. President, and Members of the Corn Belt Meat Producers' Association, and Iowa Farmers' Institute:

It affords me pleasure to meet a body of men who have at heart the agricultural and live stock interests of this great state; interests that cannot profitably be separated.

I don't know but this is the first time I have ever been introduced to an audience as a professor. I am not a professor; I am just an every-day farmer and cattle feeder. I went to the southern part of Illinois a few years ago to address an audience on cattle feeding. I was there introduced to a gentleman, who said: "I am very glad to meet you; I have heard something of you; you are a damn common looking fellow; I rather like the looks of you; you look like you had some sense." I asked him what he expected to see. He said he didn't know but some dude fellow was coming down there to talk to us old fellows about cattle feeding. I said to him: "My brother, the dudes are about all out of the cattle feeding business, and if the present condition remains longer, there are some of us not dudes, who will be out of it."

Your secretary, wrote and asked me to make this subject as broad as I could. So I wrote and told him we would consider, "Buying, Feeding and Selling the Steer at a Profit."

I think you will all see that this subject is broad enough to satisfy any one who has any desire to get in or stay in. If I were to tell you that in the past 25 years I have handled and fed cattle, I never bought a load of cattle too high; never fed cattle but what made a satisfactory gain; never sold a load of cattle on the market at a low figure, you would think——

A VOICE: That you was a liar.

MR. EMBODEN: Every old feeder here would think that I was either a big liar, or never fed cattle.

What is the truth about it? I have bought cattle too high. I have fed them when they didn't make a satisfactory gain. and I have sold them on a very mean margin. Now, that is the experience of every feeder who has been long in the business, and will be the experience of every feeder who remains in it.

There is an element of chance in the business we cannot escape, and the man that is not willing to take some risk, will never make a cattle feeder. Buying, feeding and selling a steer for profit—not that profit we think we get when we top the market with a load of cattle—not the profit we get by a profitable experience—but that profit in dollars and cents we want and need. The question of profit in dollars and cents need not much concern the man who owns his farm, is out of debt and has money with which to buy his cattle. But with the average feeder who must borrow money to buy his cattle and pay interest, as most of us feeders must in our feeding operations, and struggling to pay for a farm and get out of debt, the question of profit is one that greatly concerns him, and should greatly concern him.

The older feeders, the men who have made money in the cattle feeding business, are today practically out of business, and the feeding operations now on the farm, are conducted by their sons or tenants on the farm. But when the landlord advises his sons or tenants to feed cattle for profit, he must remember that conditions have greatly changed since the time he made money out of the business, and the system that was practically profitable a great many years ago won't do today. So that we must adjust ourselves to the conditions as we find them today.

In every community there are men recognized as good cattle men. There are others recognized as good hog men, and others that do better with horses. Now I wouldn't advise you, if you do not like cattle, to go into the cattle feeding business. I wouldn't advise you, if you want to get rich easy and quick, to go into the cattle feeding business. But if you like the business, and will continue at it one season after another, and handle such number of cattle as you can handle to advantage, I think the business can be made fairly profitable—and that is about all we are entitled to—a fair profit on our business enterprise; that is about all the merchants and business men today are doing; they are simply getting a fair profit on their business. That is what we feeders must be satisfied with, if we remain in the business.

Now, as to the question of buying these cattle, I am often asked what kind of cattle I like to feed or handle. I tell them I like the color of a good steer; I like to feed good ones. but I would rather feed a mean one and make two dollars, than to feed a good one and make one dollar. When I am buying cattle to put in the feed lot, while I am looking for the good one, I will buy most anything I come to, provided the seller will accept my price for it. You must remember, when you are after something everybody likes—if a man has a bunch of cattle that justs suits you, you must remember that the seller has a great deal to do in naming the price, and he can generally find a buyer at his price if he has got the article which is in demand. If, on the other hand the seller has some cattle nobody wants; they are not what you want; they are not what your neighbor wants, the buyer has a great deal to do in naming the price, and he can often name that price at a figure that will realize him a profit in the feeding of these cattle. Now, do not understand me as advocating the breeding of common and mean cattle; it cannot profitably be done.

There are three interests that have a right to share a profit in this cattle business, in the feeding of cattle. The breeder, and that is the man who keeps the cow, and if she doesn't earn anything but the calf, the breeder of this calf and the grower of this calf; and the man that finishes the steer, puts the finishing period on him. We all agree that each interest should share in this profit, if there is one. But conditions have been such, if the breeder and grower realizes what he considers a fair profit for him, the price is so high to the feeder that it is very hard for him to figure a profit in maturing this steer. If on the other hand, the feeder buys the steer he can realize on, the breeder and producer and grower of this steer has produced it at a loss. So it is very often the case that the feeder can buy a steer of the breeder and grower at a price he has sustained a loss and yet may realize him a profit; but if each one shares in this profit, the profit will be very small to each one of us.

Of course, as to the question of feeding cattle to an advantage, we must remember, the cost of beef production increases with the age of the animal and the period it has been on feed. The longer the steer has remained in the feed lot, the next hundred pounds cost more than the hundred pounds put on previously, and so on. We should remember this, that if we are buying calves and yearlings to grow on the farm, we should get just as much quality and breeding as possible; we cannot get too much. If we must buy common and mean cattle, let the other fellow grow them and turn them on short feed. We must remember and we all know there are a great many good cattle feeders in nearly every community that have never fed a prime bullock in their life. There are other men who have always bought prime cattle and have finished them; and I want to state here, that it is not always the cattle that top the market that make the feeder the most money. I can handle a calf and feed a calf eight or ten or twelve months, but I don't want to feed a grown steer more than from three to five months, if I want to realize a greater profit.

The question of feeding after we have obtained this steer is one that we should carefully consider. Now, I am not going to talk to you about protein, carbo-hydrates and balanced rations; I don't know much about those things myself, and I leave that for those that do. But I am going to talk to you about corn and the various forms in which we put that corn to feed it.

Of course, in the great corn belt of Iowa and Illinois, the feeder is extravagant in the use of corn and always will be. I want you to remember that I am speaking from the standpoint of a feeder, and not from a breeder's standpoint, and when I am talking about plain and common cattle, I am often accused of advocating the handling and growing of these cattle. But I am not; you will undestand I am not. But these cattle are with us and they are going to stay with us; they will be with us a good while yet. They must be converted into beef, if they are put on the market; they are put on the market, and that is the end of all of them.

Now, considering feed cattle, I think shocked corn is one of the best foods that can be given a steer. I think it is the best single feed for it, throughout the feeding period, from start to finish. As a rule, I do not believe it pays to grind corn for the cattle. I would say to feeders who have plenty of hogs following the cattle, as most feeders have, I would put the least expense possible on a bushel of corn delivered to the steer. Yet I grind about 75 per cent of all the corn I feed, and for this reason (I have a farm of 100 acres) I buy all my cattle and practically all my corn. This 100 acres of land is mostly in grass; I grow a little corn and feed out of the shock; and the system that is practicable to me and profitable to me, it might not be profitable and practicable to somebody else. Roughness is very high and has been for a number of years, in Central Illinois, and is probably here. I find that I can convert my ear corn into ground corn, cob and all. I think that 100 pounds of ground corn with the cob for the first 60 or 90 days, is worth as much as 100 pounds of clear, shelled corn for feeding cattle; for that reason I am using ground corn principally. With ground corn and cob cattle need very little if any other roughness; they will do well without any other roughness whatever. I have handled a great many cattle on ground corn alone without other roughness.

The economy in the use of self-feeder is quite an advantage, and it is being used with advantage by a great many feeders; feeders are using it generally with very satisfactory results. I have used it for a number of years. I would prefer, if I had a good man feeding, perfectly regular, twice a day, what the cattle would clean up; but it is pretty hard to do that, so that for a number of years I have used a self-feeder with more satisfactory results. I use in connection with ground corn, either cotton seed meal or oil cake; I think it a very profitable feed. It shortens the feeding period and gives a better finish on our cattle, which has come to be an important thing in our beef production.

At the Chicago International, last week, I had a load of cattle in the short feed class, bred in New Mexico; they were in Colorado, and had been there a little over a year. They weighed 752 pounds when I put them on feed; I fed them 107 days; they made an average gain of 334 pounds on 107 days' feed. They ate 31 bushels of corn, 259 pounds of oil cake and 535 pounds of hay, the cost of that gain was $21.92 or $6.60 a hundred. We should remember that it is rarely the case that we can sell the gain we have produced on our cattle during the period of winter feeding, at what it has cost us to produce that gain; it is very seldom we can do it on two-year old cattle; not often that we can sell the gain for what it cost to produce it. To illustrate: We buy a thousand-pound steer at $4 a hundred, or $40. We feed 50 bushels at 40 cents—$20. The steer, if he has done well, will gain 300 pounds. We sell that steer after he has been fed, at $5 a hundred. It is very evident we sold that 300 pounds of gain for $15.00. Our only profit, if we have one is on the advance of the original weight. We have in this instance, one dollar a hundred in advance, which is $10.00; deduct the $5 loss, which leaves a net profit of $5 on the steer, which, I think, is a fair average profit.

As I said before, it is not often we can sell the gain for what it cost to make it. I don't think the average Illinois or Iowa feeder during the winter period of feeding, gets to exceed a 5-pound gain from a bushel of corn; I don't think he gets to exceed 5 pounds.

The question of margining our cattle is one that concerns the feeder a great deal, and I think when a man's cattle are ready to go on feed, he should consider the age and quality and the weight of his cattle, and the available feed, and his bank account. I think he should decide then when these cattle should be marketed and feed them accordingly, and market them when the time has expired. I invariably, when I put my cattle on feed, name the date, within a week. I will say, I move these cattle in May, or the middle of June, or first of July, and they go then. I don't wait until the cattle are ready to go, and then, as too many feeders do, write their commission firm and tell them they have some cattle now ready to market, and ask them when to be there with them, and read the daily quotations every day, and when you strike a high time, you go there—and you will find a great many fellows who have reasoned the same way you have, and they are there too. You must remember, good markets are shared by few, and the mean markets by many. It is a very expensive operation, to hold a bunch of fat cattle, waiting for a market; 30 to 60 days soon slip around, and we are producing beef pretty high, and the chances are we get on a market no better than it was 30 to 60 days earlier. I think if you would select a dozen feeders in this audience today, and let them feed cattle the next five years, and let half of them name their shipping day ahead, whether 3, 6 or 10 months, or a year, with every bunch of cattle they feed, and move those cattle on that day, they will strike as good average markets as will the other six men who have finished their cattle and then try to hit the high tide. I believe the ones who name the date and stick to it, will strike as good an average market as the man who watches the market in order to get the best of it.

In regard to dehorning cattle, I think the results obtained following the taking off of the horns, justifies taking them off. That it costs feeders more to dehorn two-year old steers than at the earlier date, most of us are ready to admit. I don't think we can dehorn good strong two-year old cattle for less than $1.50 to $2.00 a head. Sometimes we dehorn cattle and it does not seem to affect them very much, and again we dehorn them under just as favorable conditions and it nearly kills them, and we sometimes lose a steer. I think the results obtained, however, justifies taking off the horns.

Now, if this subject is going to be of profit to us here, I think it will be from the exchange of ideas and views on this question. I have hurriedly gone over it, and possibly haven't touched some phases of it you might like some information about.

If I am able to answer any questions, I will be glad to do it. I thank you for your attention.

QUESTION: Why is it you grind your corn and advise the other fellow not to?

MR. EMBODEN: For this very reason: Most farmers have more range than I have; they have more roughness and plenty of hogs to follow their cattle. I depend more on the steer alone, and make my gain, and as I said before, I think I am justified in putting the expense on a bushel of corn which another feeder situated differently would not be justified. I have but a small farm and feed about 200 cattle during the year. I find I can grind corn with a profit. With the average feeder, I say, I don't think it pays to grind the corn.

In regard to the factor of pork production in connection with beef production. I haven't said anything about that yet. Yet the gain we make in pork of the corn actually consumed by the steer, is greatly overestimated. You hear a feeder say he has fed two or three loads of cattle, that the cattle didn't do very well, hardly paid out, but I sold a thousand dollars worth of pork, hogs, and got $200 worth left. Now, he doesn't say so, but leaves the impression, or wants to, that this thousand dollars worth of pork has been made from the corn consumed by the cattle, and would have been an actual loss if he hadn't had the hogs. What are the facts in the matter? These hogs were worth $600.00 when they went into the feed lot, and their feed, even extra, is all charged to the steers, and of course the steers haven't made a satisfactory profit. If you are going to charge all the corn your steers and hogs eat, let us be fair, and give the steer credit for all the beef and pork that is made from this corn. I don't think the gain that the hogs actually make from the corn consumed by the cattle exceeds a pound and a half to two pounds to the bushel, with the average feeder, during the feeding period. Another thing you want to remember, when you are putting corn into that steer in that form, there isn't so very much left for the hog to feed on. I have soaked corn with very satisfactory results, and I think it increases the feeding value about 20 per cent. There isn't quite so much left for the hogs following as there is if the corn is fed whole and dry. Two years ago I had 60 head of yearlings on the pasture. That year I fed them by hand. They were given soaked corn shelled, a little ground corn and some oats; 60 head, from May until September. There was no corn wasted and they were fed regularly what they would clean up.

I was feeding them for the Show, and of course wanted to make them good. I don't think, during the entire feeding period, from May until September, there was two bushels of feed thrown out of their troughs to the hogs. The gains the hogs made on fattening these 60 head of cattle during the summer was 1,780 pounds. A good many feeders would tell you that they sold five hundred hogs out of that feed lot. And those hogs had made a growth during the summer on a good bluegrass pasture alone, besides the corn they got. So that the gain the hogs made from the corn actually consumed by the cattle is greatly overestimated. Yet the hog question is a great factor in profitable beef production, and it is almost impossible to feed cattle profitably without the hogs following; yet we ought to feed the cattle so as to gain most from the corn consumed by them.

QUESTION: What is your method of handling corn fodder?

MR. EMBODEN: I cut the corn and put it in the shock and leave it in the field until it is fed. I feed all my feed under cover. I feed all my shocked corn in the barn and the sheds. This year I have about 300 shocks of corn in the field and expect to shred it, because I don't expect to put any cattle in until February, and I will probably feed those cattle late, and I want this fodder for them during the spring. For that reason I thought I would shred it in the course of the next two weeks and put it in the barn to feed it shredded. But I would prefer to feed it whole out of the shock. I don't think it pays to shred corn to feed. The first I shredded two years ago, the weather came on a little damp and I continued shredding, and I had 110 hogs in the lot and about 70 head of cattle. After we got through, I think the second day, the whole thing was steaming; you could hardly bear your hand in it. I went to town and took out insurance on all the cattle and hogs I had in the barn. I told the agent I had heard of spontaneous combustion and fire although I had never seen any of it. I had the building insured and wanted the contents insured; but it didn't burn.

QUESTION: Which is the most profitable, common cattle on short feed or good cattle on finished?

MR. EMBODEN: That is a hard question. Now, I handle a few cattle each year on long feed; they are principally Texas calves that I give ten months or a year's feed. I fed 50 head last year and made top cattle of them; sold one load at 8.90 and the other at 8.50. At the last International I had two good loads, that fell down in the auction ring. I sold one load for 6.50 and the other for 6.30. That was no fault of the cattle.

I like a few calves and yearlings, but I do not like to put all my interest in one kind of cattle. For that reason, during the spring I handle the cheaper grade cattle, and turn on shorter feed. I find that these cattle have made me more money than the cattle I have given high feed. If I would handle three bunches of cattle on short feed, not necessarily common cattle, but aged cattle, and give them short feed while I might not for a certain year's experience on the whole, I would find that the three bunches would make me much more money than one bunch given the long feed. So that I have divided my feeding interests. While I feed a bunch of calves ten or twelve months, I generally put a bunch in in February and market about May, and put a bunch in in the summer and market in the fall. I find cattle going on feed in the summer and the market in the fall should be better quality than those in the February marketed May or June. I find the difference in the selling price of a common steer and the prime steer, handled under like conditions, is not as great as it was in the buying price. If you buy those cattle at $1 a hundred difference, when you begin the feeding period you will find the price at the time you go on the market will run about 40 to 60 cents difference. Of course, a well bred steer makes a little the best gain, but not always, and the gain made sells for a little more per hundred, but the advance, as a rule, between the buying price and the selling price on these shorter fed cattle, is greater on the common steer than on the prime steer.

QUESTION: Can you state your freight rate per hundred over the shrinkage.

MR. EMBODEN: My freight rate from home is about 12 cents per hundred. I buy and handle a good many cattle in the spring of the year and summer. Most cattle I buy at home are weighed at the farms and are shrunk three per cent. That is if you were feeding a bunch of cattle and I buy your cattle, I will buy them, weighed on your scales, shrunk three per cent, in the morning, out of the feed lot; generally weighed up before they get their morning feed. If I am offering to sell to a buyer, I will price him these cattle shrunk three per cent; he can weigh them any time. Of course, that is not quite answering the question. I find these cattle, average conditions, will shrink about

5 per cent. That is, if I get a 1200 pound steer, I get 36 pounds. I find that steer has shrunk about 24 pounds on an average. Occasionally you will find a load of cattle that will weigh out, and again you will find a load of cattle, you think the conditions are just as favorable, and you have a condition you cannot account for. This matter of shrinkage we have no control over, so much depends on the conditions of the cattle weighed at home and the conditions at the market.

QUESTION: I notice these cattle you reported on made an average gain of three pounds a day.

MR. EMBODEN: No, sir; they made nearly 3 1-8 pounds. My cattle generally make an average of 2 ¼ a day if they are fed not to exceed 5 months; if they are fed longer, they cannot maintain that gain. These Texas cattle generally go about 11 months on feed. They make an average, one year with another of about 700 pounds.

QUESTION: Will you state your method of starting those calves?

MR. EMBODEN: I received some calves yesterday, before I left home from Chicago; they were shown at the International. They were first prize, from the Southern District of Texas, Tick country. I put out in the rack some clover hay and a little sorghum; I had cut and put about a bushel of corn in the trough; about a half bushel of oats and about a half bushel of ground corn, with a little oil cake—a bushel to 22 calves. Probably by this evening that feed will be eaten. There may be a few calves that will probably not touch it at all, and the majority of them will get around the box and take a little feed, and during the day this bushel of feed will be gone. Tomorrow they will probably take a bushel and a half, and in the course of a week—I never had a bunch of calves from the range it would take over a week for all of them to go on feed, and putting out a little feed at a time, you will find the calves take readily to it, while others will be a few days or a week getting to the feed. They will all soon take to it, and I will increase the feed then, and these calves will be fed ground corn with a little oats and about a half pound of oil cake until spring, and then will be put on full feed.

QUESTION: How much do they weigh?

MR. EMBODEN: About 400 pounds now.

QUESTION: In your experience what is the most profitable high priced feed and low priced feeders, or high priced feeders and low priced feed?

MR. EMBODEN: Well, there is a combination. I don't know that I ever met just that proposition. Of course, when you have got high priced feeders the common cattle have advanced a little in proportion; you often have to pay more for your common cattle than you would otherwise have to pay for them. Of course, the feeder don't get much pleasure or satisfaction in putting high priced feed into a common steer, especially during the feeding period. Sometimes, when the cattle are sold he has got some satisfaction out of it, because he has realized a profit. But you couldn't lay down a rule and say, high priced feed on common cattle at all times would be more profitable than low priced feed on high priced cattle, because the price of feeders might be so high, and the price of finished cattle low, that you wouldn't realize a profit, even feeding these cattle a low priced feed. On the other hand, a common steer bought at a low price and the feed to feed it at a very high price, the market might be such, that he wouldn't realize you a profit.

I want to say here, if your system of handling your feed and market cattle has been satisfactory to you; if you realized fair profits on your investment and labor involved; if the gains have been satisfactory, and your profit satisfactory, I wouldn't advise you to change your method for what I may say, or anybody else may say.

A VOICE: It has not always been so; that is why I am asking.

MR. EMBODEN: I don't know of any feeder with whom it has been so. As I said before, there is an element of chance and this we cannot escape.

QUESTION: When are you going to sell those calves you just bought?

MR. EMBODEN: I expect to show those calves of the Southern District, at the Chicago International, next November.

QUESTION: How much do you expect to make them weigh?

MR. EMBODEN: I expect to make them weigh about 1150 at Chicago. These calves this year will weigh 1125 or 1150.

QUESTION: How do you feed cotton seed meal and oil meal?

MR. EMBODEN: In connection with my corn, with ground corn or shelled corn, whatever feed I am feeding. If I am feeding broken ear corn, I put it in a wagon and pour a sack on the feed.

Question: How many pounds to the steer a day?

Mr. Emboden: These short feed cattle, I gave them a pound a day 16 days in August, 2 pounds in September, 2 pounds in October and 3 pounds in November.

Question: What did you pay for those calves you just bought?

Mr. Emboden: That is a leading question. Those calves cost $25.00.

Question: They are better than the ordinary run?

Mr. Emboden: O, yes, they were selected calves at the Chicago International.

Question: You are going to change your method from feeding common cattle to the nicest ones?

Mr. Emboden: No, sir; I didn't say I have any method of feeding common cattle. I have always fed a few prime calves. I do not feed any year the same class of cattle during the year. I am going to put in some in Februry, I don't know which yet. I will put in such as I at the time think I will realize the most profit on. When I buy I put in anything I find if the seller takes my price for it. If I am willing to pay 4 for a good steer and he is offering me a right mean one for 2, I will buy him.

Question: You are not feeding those calves for the June market?

Mr. Emboden: No, sir.

Question: Could you make a profit with such system of feeding these calves and sell them on the June market, one year with another?

Mr. Emboden: Well, conditions the last year have been such that I could. I want to say this: There are always some surprises to a feeder; some of the cattle he counted on being the best disappoint him, and other cattle he hasn't counted much on, and would like to have thrown them out of the bunch, have passed some of the other cattle and in the finishing period were in the top row. That is a common experience. Two years ago I had 51 calves out of the same herd. One morning I weighed them; I cut out 17 top calves I considered worth the most money and weighed them; I cut out the next 17 and put a ring in the right ear, and I had 16 left and put a ring in the left ear, and put them altogether, and fed them under the same conditions. The consequences were, some of the calves in the third lot had gone to the top and two calves out of the top lot had dropped to third place. So that is a common experience. You cannot tell about the developing of young animals, how they develop.

QUESTION: Do you expect to turn those young cattle on the grass this summer?

MR. EMBODEN: The calves, generally, I have put on the grass during the season. These I have now, I doubt very much whether I will put them out on grass. There are 30 or 40 yearlings I will probably put on grass.

I want to say this to feeders putting cattle that are finished on grass: If you have a finished bunch of cattle and desire to hold them longer, I wouldn't turn them on grass; I would hold them in a dry lot. Invariably the cattle that do the best on grass, have had plenty of roughness during the winter. But I do not believe in putting really finished cattle on grass. I would let them stay in the lot.

QUESTION: These cattle you turn on grass, do you expect to feed oil meal to them?

MR. EMBODEN: Yesr sir; I had 60 acres of bluegrass last year, and they were running to a self-feeder, ground corn frequently too. In regard to feeding oil cake, I find I can feed two or three pounds to a bunch of cattle for an indefinite period, and if you will increase this to 6 or 8 pounds, you will have to shorten your feeding period or they will quit you. A few years ago I was feeding a part of them 3 pounds and a part 6 pounds. I got three large steers from a neighbor getting not quite full feed. I told my sons we would put them on 10 pounds of oil cake per day. We did that, and they stood it just thirty days, and during that time the steers made an average gain of over 6 pounds a day. These three large steers weighed 1470 pounds when I started them, and they made an average gain of over 6 pounds a day for 30 days, then they quit and didn't practically do anything for the next five weeks. The cattle getting six pounds stood it for 76 days and made an average gain of 3¾ pounds a day, and they quit. I weighed those cattle up at the same time I weighed the larger steers, and I weighed them five weeks later when I shipped them, and the results were about the same on each bunch, hardly a pound a day. The other cattle which had been getting three pounds a day for 5 months had made an average gain of 2 ¾ pounds a day for the five months feeding period. So that if you will make up your mind that you want to feed five or six pounds of oil per day, provided you will settle on how many days you will feed it, and market your cattle at that time, I think you will have satisfactory results; if you are going to feed your cattle longer, give them less oil cake.

QUESTION: Is it safe to feed these little fellows so much oil meal?

MR. EMBODEN: No, I don't think it is. These calves now; I will not give them over a half pound of oil cake during the winter and spring and increase it toward the end.

QUESTION: Let me ask you if you notice any difference in the flies bothering younger cattle or the older cattle?

MR. EMBODEN: I don't know that I have. What aged cattle I have, are fed in the dry lot. Nearly all my feeding is in the winter except the yearlings in the summer.

QUESTION: What particular breed are the range cattle?

MR. EMBODEN: Principally Hereford.

QUESTION: Do you feed those calves cotton seed meal?

MR. EMBODEN: I have fed a little of it. I don't think it is as good as linseed meal. I think often there is an irritant about the cotton seed meal, and I have been using linseed meal for a number of years and I prefer it.

QUESTION: I would like to ask you if you vaccinate your calves?

MR. EMBODEN: I never did. I have handled calves more or less for 20 years, and never had a case of the black-leg, and a great many range calves are vaccinated and great many are put on the market not vaccinated. An old feeder years ago told me to use a little saltpetre in connection with salt, that it was a sure prevention of black-leg. I don't know whether there is any merit in this or not. He used 4 ounces of saltpetre to 8 pounds of salt, and I have been using that for a number of years, and never have had a case of blackleg. There may be no merit in that; it costs but a trifle and may be worth trying.

QUESTION: Do you think it essential to feed oil meal to finish steers?

MR. EMBODEN: I use it when I put a bunch of age cattle in the lot; I would like to do it as short a time as possible. I find with the addition of linseed meal or cotton seed meal, I can shorten my feed. But we must remember, corn might be at a price, or biproducts at a certain price, and we wouldn't be justified in feeding it.

THE PRESIDENT: I am sure this discussion is very interesting and we would all like to listen to it, but on account of our limited time, it becomes necessary to close it at this time. We have certainly all enjoyed the address at the hands of our friend, who has had such a wide experience in these matters.

The next subject is "Beef Production in the Corn Belt," by Prof. H. R. Smith, of Lincoln, Nebraska.

BEEF PRODUCTION IN THE CORN BELT.

H. R. SMITH, LINCOLN, NEB.

Mr. President: I want to say, that I feel like congratulating myself that I am here in an audience of cattle men. I know you are cattle men; I can tell a cattle man a long distance by his face. Judging from the questions fired at the speaker who just preceded me, I am very sure I am right in this guess. I think I have enjoyed the address as much as any of you, and feel like adding my testimony to what has already been said. In speaking of the address, there is one thing I might add to a statement made in the matter of ground feed. In our experiments at the Nebraska station, conducted during two years, we have not found it profitable to grind feed for cattle. We have found we can get a slightly larger gain by use of ground feed, but the ground corn has been worth to us about 2 cents per bushel more than unground, and that two cents won't pay for grinding. This is the result of two experiments; I won't say that it is conclusive.

In an address on beef production in the corn belt, I should precede my remarks with something pertaining to types, but because the time is limited, I will simply say a few words in regard to the types of cattle to feed.

I was at the International last week and I learned a few things there. Nearly all of us can take away some ideas, and I also took away a hard cold. I might give you a few ideas on the run of types of cattle most sought after now.

When I sat there watching the judging done, and when on Saturday I sat there in the pavillion and saw the cattle sell, I was thoroughly convinced of this fact: that the buyers are no longer wanting big, heavy fat cattle; they are paying higher prices now for medium weight cattle. I had in our own consignment a 1900 pound steer, a very good type; he sold for 6½; when lighter cattle weighing 1300 pounds sold for 7½ or 8 cents. It was very noticeable in the carcass judging; it wasn't the fat carcasses that were winning the prizes; it was the cattle of medium flesh, rather low in flesh. In a talk with the judge, Mr. Durnough, from Scotland, I found further that the people across the water have changed their ideas about the fat cattle. Where, two years ago they paid the highest prices for the big, heavy cattle, they are now showing their preference in a very decided way for the very light cattle. He made the statement very clearly, that they much preferred a carcass weighing 600 or 700 ponds, than a heavy carcass. This was also shown in the final judgment, when the grand championship prize was given to a calf weighing about 1050.

I haven't time to discuss the question of type, I simply throw this out as a little fresh material I gathered. I will now give you something along the line of our results at the Nebraska Experiment Station upon rations. I will say that our conditions are very similar to yours. I think that whatever I give you here can be applied in this state. When I first came to the state, my experience with cattle feeding had been in another state east of this. While I had fed cattle all my life, I realized in coming to a new state, it was first of all necessary to become familiar with conditions existing in that state. After traveling all over the state. I found this to be true in eastern Nebraska: The majority of the feeders there used corn and prairie hay; some cane or straw, and a few, clover. Others were making some use of commercial feeds—oil meal and cotton seed meal; but about three-fourths of the feeders of that state were feeding corn and prairie hay.

After making these observations, I began at once to put on some experiments which would show whether or not they were on the right road; whether or not the feeders of Nebraska should change their methods, because of the changed condition, and I am going to give you some observations we have made at our station along the line of rations for cattle feeding.

Let me give you some idea how we carried on these tests. We have been carrying on our tests in lots of ten steers each. We selected these cattle from the range, because we wanted them under uniform conditions. We didn't like to pick up feeders here and there; we preferred to take them from the range, where they had all been handled the same way, having had no grain or previous feeding.

We carried these cattle usually five or six months in length. We weighed them three or four times to begin with in successive days, and we took the average of that weight. Then we weighed them at the end of every month and got the monthly gain. They are given water once or twice a day, usually twice, and the feeds are given, as I will point out to you on these charts. I brought along some charts.

The first chart I will show you deals with an experiment under way for three years, upon the relative economy of corn and prairie hay, and corn and alfalfa hay. In our experiment station work we do not feel at all safe in drawing conclusions from the results of a single experiment; we prefer to carry on that test for a period of two or three years. I do not suppose you feed much prairie hay here, or alfalfa. I will say, that the Nebraska prairie hay is very similar in composition to your timothy; they are very nearly alike, and that might almost be said of alfalfa. I might say alfalfa belongs to the same family, of clover, and is similar to it. We would like to think alfalfa is ahead of clover, but have made no tests. Below you will find a chart of the experiment carried on during a period of three years:

TABLE 1.—*Corn and prairie hay versus corn and alfalfa*

	Yearling Steers Dec., '03, to June, '04,—24 weeks		Two-year-old Steers Jan., '05, to July, '05,—24 weeks		Two-year-old Steers Nov., '05, to Feb., '06,—12 weeks		Average for 3 years	
	Shelled corn and prairie hay	Shelled corn and alfalfa	Shelled corn and prairie hay	Shelled corn and alfalfa	*Snapped corn and prairie hay	Snapped corn and alfalfa	Corn and prairie hay	Corn and alfalfa
Average initial weight per steer, lbs.	801.00	808.00	926.00	937.00	975.00	977.00	901.00	907.00
Average gain per day lbs.	1.35	1.97	1.90	2.30	1.20	2.06	1.48	2.11
Average grain fed per day, lbs.	14.30	15.30	17.90	18.60	9.47	9.47	13.89	14.46
Average hay fed per day, lbs.	8.70	9.20	9.70	9.20	18.22	22.15	12.21	13.52
Grain consumed per lb. of gain, lbs.	10.50	7.70	9.52	8.14	7.87	4.60	9.29	6.81
Hay consumed per lb. of gain, lbs.	6.50	4.70	5.19	4.02	15.16	10.75	8.95	6.49
Total food consumed per lb. of gain, lbs.	17.00	12.40	14.71	12.16	23.03	15.35	18.25	13.30
Cost of 100 lbs. gain	$8.27	$6.04	$8.23	$6.89	$8.76	$5.49	$8.32	$6.29
†Profit or loss per head including pork produced from droppings	§$0.38	§$8.66	‡$1.13	§$2.86	‡$0.08	§$3.56	‡$0.27	§$5.02

*Snapped corn is the ear within the husk or shuck. The figures in the table are its shelled corn equivalent.

†In computing profits all items of expense were included except the labor of feeding which is customarily figured as an offset to manure made.

§Profit.

‡Loss.

It will be noticed by the chart, that the weights of the cattle vary from 800 to 975 pounds. In any single test made we aimed to have the cattle about the same weight. It would not do to compare yearlings with the two-year old. In the first experiment the yearlings weighed about 800 pounds apiece. You will notice on corn and prairie hay the gain was small, 1.35; where as on shelled corn and alfalfa it was 1.97. You will notice the figures for the next two years, on shelled corn and alfalfa and snapped corn and alfalfa and snapped corn and prairie hay. The average for the three years on corn and prairie hay is 1.48; on corn and alfalfa, 2.11. The wide contrast per year in favor of the use of alfalfa is to be noticed. But what you are interested in mostly is the cost of production.

Now, let me say this: the statement was made a while ago in the previous discussion that the cattle will gain 2½ to 2¾ pounds per day. In this experiment where we weigh them three or four times every month, and where they are molested by visitors a good deal, we can not get the gains you can on the farm.

I am not going to refer to all the figures on the foregoing chart. Now, as to the amount of grain consumed, you will see that the yearling took 14.30 pounds per day, and the next year about 18 pounds per day.

Now, you are most interested in the cost of the gains. Figuring alfalfa and prairie hay each at $6 a ton, and corn worth this year, 33, 35 to 39, taking an average of 36 cents per bushel. The cost of gain on corn and prairie hay is $8.27, and the cost of gain on corn and alfalfa is $6.04, snapped corn and prairie hay, $5.49; corn and alfalfa, $6.29.

Now, that looks like a big cost, and as the previous speaker pointed out, you cannot make a profit on cattle feed unless they are sold considerably over the cost price. You cannot afford to feed cattle on just what they will gain; you have got to sell them at an advance. These cattle were sold at an advance averaging $1.25 per hundred. At that advance over the cost price, the profit the first year on prairie hay and corn was 38 cents per head; on shelled corn and alfalfa $8.66, the second year on shelled corn and prairie hay there was a loss of $1.13, and on shelled corn and alfalfa, a profit of $2.86. The third year there was a loss on prairie hay of 8 cents per head. But take the average for three years and the loss on corn and prairie hay is 27 cents per steer. Figuring these profits and losses, the feeds were figured at market price in the city of Lincoln; at the farm, feeds would be consumed for less than that.

A VOICE: Not in this state.

PROF. SMITH: I want to say further that all the items of expenses are included in this with the exception of the labor. We did not figure the cost of labor; we figured that the cost of labor was offset by the value of the manure. In states further east they consider the value of manure worth much more than the labor. I feel that the manure will well offset the labor.

QUESTION: What is the feed value of alfalfa over good red clover?

PROF. SMITH: We have made no comparisons. I can't tell you. We hope to get some information on that point. I will give it as my personal opinion that in the experimental work I am convinced alfalfa is superior to clover, because it is eaten with more relish; there is less waste. We have found that the cattle will sometimes leave their grain to eat alfalfa.

Now, we come to another problem. There is the comparative value of corn and alfalfa and corn and alfalfa and corn-stover. By corn-stover I mean the stalk without the ear. We cut the corn as soon as it is ripe, and the stover is the corn stalk cured, just after the corn ripens. We have two experiments, as shown by the table which follows:

TABLE II.—*Corn and alfalfa versus corn, alfalfa and corn-stover:*

	Jan., '05, to July, '05,—24 weeks		Nov., '05, to Jan., '06,—12 weeks		Average of the two Experiments	
	Shelled corn and alfalfa	Shelled corn, alfalfa and corn-stover	Snapped corn and alfalfa	Snapped corn, alfalfa and corn-stover	Corn and alfalfa	Corn, alfalfa and corn-stover
Average initial weight per steer, lbs.	937.00	941.00	977.00	974.00	957.00	957.00
Average gain per day, lbs.	2.30	2.40	2.06	1.96	2.18	2.18
Average grain fed per day, lbs.	18.60	18.40	9.47	9.61	14.03	14.00
Average roughness fed per day, lbs.	9.20	9.90	22.15	22.45	15.67	16.17
Grain consumed per lb. of gain, lbs.	8.14	7.89	4.60	4.90	6.37	6.39
Roughness consumed per lb. of gain lbs.	4.02	4.56	10.75	11.44	7.38	8.00
Total food consumed per lb. of gain, lbs.	12.16	12.45	15.35	16.34	13.75	14.39
Cost of 100 lbs. of gain	$6.89	$6.49	$5.49	$5.01	$6.45	$6.05
Net profit per head including pork	$2.86	$3.32	$3.56	$4.20	$3.21	$3.76

We have the shelled corn and alfalfa, and shelled corn, alfalfa and corn-stover. In the shelled corn and alfalfa we have an average gain per day of 2.30 pounds. Now, when we add the roughness, the stover, we get a little larger gain. You will notice that the results, where we used the snapped corn and alfalfa, were a little different. I dont think we can expect quite as good gains as when we use shelled corn, but in the case of the snapped corn we feed the husks, and they seem to be beneficial.

In the second experiment where we used snapped corn and alfalfa, we had a gain of 2.18 per day; while in snapped corn, alfalfa and stover, the gains were not as great. You will notice that the average daily gain was the same. When it comes to the cost of the gain, we have a different proposition. We figure stover at $2.50 per ton, and alfalfa at $6.00. The material on our farms in Nebraska is usually wasted. They usually figure a stalk-field at 50 cents an acre. Now, let us notice the cost gains: It is $6.89 without the stover; $6.49 with the stover. The second year it is $5.49 without the stover, and $5.01 with the stover; and the average for the two years, as shown upon the chart, is $6.45 without the stover, and $6.05 with the stover; so that we produce beef at 40 cents per hundred less if we use the corn-stover.

Question: Did you figure anything on the cost of cutting?

Prof. Smith: We figure the stover at $2.50. Now, the profits, you will see, are $2.86 per steer without the stover, and $3.32 with the stover. The next year they are $3.56 without, and $4.20 with the stover. The average for the two years was 55 cents a hundred in favor of the stover. Inasmuch as we figure stover at $2.50 a ton, it seems well worth while to save the stalks and make use of them. I believe this is one of the reasons why we get better results, at least more economical beef, by the use of stover, that in feeding clear alfalfa we find the steers sometimes a little too loose, and I think that is one of the reasons for getting better results—feeding this roughness in the form of stover. I don't know but what you might have just as good results if you mixed timothy hay with alfalfa.

Question: Why did you husk the corn?

Prof. Smith: Why didn't we leave it in the fodder? I will say, in carrying on these experiments we have to first of all make them accurate.

Question: Is shredded fodder the same thing as stover?

Prof. Smith: It would be the same thing and a little bit better.

Question: To what extent is there danger of fire?

Prof. Smith: There is a little danger; if it is shredded too wet. On our old farm in Michigan we nearly always shredded our corn. We waited until nearly November. I am convinced, however, it does not pay to shred for outside feeding. For inside feeding I believe it will pay to shred the fodder.

QUESTION: What do you figure on silage?

PROF. SMITH: I don't believe we are quite ready for silage. I don't know how it is in Iowa. While we have made no tests, I don't believe we can spend the labor and make corn silage for fattening cattle.

QUESTION: Have you had any experience?

PROF. SMITH: We have made no comparisons yet on silage and corn-stover; but so long as we can make good gains on shocked corn without shredding, I don't see why we should worry about the other. I might say, though, we have also carried on for two years a test, of which I have no chart here, comparing detached corn from the stalk with corn fed on the stalk. I told you a while ago we couldn't feed it because we couldn't get the weight. The way we did that, we took the corn, just as it came, weighed it and then detached the ear and weighed it. In that test, we found the results were practically the same. We only have two winter results, but I think they go to show there is no particular advantage in taking it from the stalk. I believe the better way is to let the steers take off themselves; they can do it cheaper than you can hire it done.

QUESTION: How do you feed your corn on the stalk?

PROF. SMITH: Our practice on the farm was always, in the fall months, to scatter it on the sod. During the winter feeding, where the cattle are confined, we have fed them in racks, built so that the cattle can eat from both sides, with vertical slats, far enough apart to put their head through. They will eat the corn off first and then they will strip the leaves. They will not consume the butts; there is little nutrient value in the butt. We always charge up the whole stalk to them. These slats prevent them from pulling the corn out and tramping it under foot. I believe thoroughly in that method of feeding, inasmuch as the labor is scarce and high; I believe in saving all the labor we can. A man with a harvester can cut six or seven acres a day. A man can put it in the barn or shock at $1.18 per acre. A good many people will make the argument that feeding shocked corn or stalks is not practicable, because of the labor involved. You can put your corn in the shock just as cheaply as you can put it in the crib, and you can feed it right out of the shock, as the previous gentleman suggested in his talk.

QUESTION: You don't think there is much feed in the stalk after the leaf is stripped off?

Prof. Smith: No, sir; I do not.

Question: Which would you prefer, hauling out the manure, or the shredded fodder or the whole stalks?

Prof. Smith: The shredded fodder. We let our manure stand all summer, and in the fall of the year it is well rotted, and we do not really have any difficulty in hauling it out.

Question: Don't you find when it is cut that the cattle seem to eat it and like it?

Prof. Smith: Yes; they will eat it just as much where you shred it. It is no doubt better where it is shredded. If you would take the butt of the stalk and pay for having it shredded, it wouldn't be of very much value to you. It seems like a useless expense to shred the butt; the nutrient is lacking. You can't blame the cattle for refusing to eat it.

Question: Is there any difference whether it has been stacked or not?

Prof. Smith: I imagine there would be less loss in the stack; but for early feeding I think it is just as well to haul it right out of the shock and feed it.

Question: Isn't stacking corn fodder the meanest work you ever done?

Prof. Smith: That depends on whether the bundles are well made. We sometimes put it in long stacks and don't build high stacks, and have it about the height of a wagon, which makes it a good deal easier.

Question: Have you had any experience in feeding sweet corn fodder?

Prof. Smith: No.

Question: When you feed shocked corn, you have to feed a good deal of corn besides, do you not?

Prof. Smith: At the beginning we feed shocked corn and alfalfa. We cannot produce beef any cheaper than on that combination. Along towards the latter part of the feed it is well to feed some shelled corn or snapped corn in addition.

Speaking of the alfalfa question, I realize some of you are not growing it. We can grow it in all parts of our state, and I think you can grow it in the western part of your state. I will say this to you: I am absolutely convinced, the quicker you grow alfalfa, the better you are off. They are freighting it to us in the form of a meal at $20.00. Although I am inclined to think, if you have to pay $20.00 a ton for alfalfa meal, it would be just as well to keep on feeding linseed meal.

QUESTION: Do you think shocked corn and alfalfa hay would be better than shocked corn and plenty of bluegrass?

PROF. SMITH: I am not prepared to say which would be the cheaper, because we have made no tests on the subject. I know this to be true—for 25 years we have fed just that combination, and always get good gains, are often able to market our cattle right off the grass and get a good finish at a low cost. But for winter feeding, shocked corn and alfalfa makes a good combination.

Now, I am showing you a comparison of wheat bran versus linseed meal versus cotton seed meal. I am presupposing that we are not feeding anything but corn and timothy, or corn and prairie hay, or corn and stover, as illustrated by the following table:

TABLE III.—*Wheat bran versus linseed meal versus cotton-seed meal.*

	Feb., '06, to Apr., '06,—8 weeks			Nov., '06, to Apr., '07,—20 weeks		
	Shelled corn 75%, bran 25%, prairie hay	Shelled corn 90%, oil-meal 10%, prairie hay	Shelled corn 90%, cotton-seed-meal 10%, prairie hay	Corn 78%, bran 22%, corn-stover	Corn 90%, oil-meal 10%, corn-stover	Corn 90%, cotton-seed-meal 10%, corn-stover
Average initial weight per steer, lbs.	1146.00	1187.00	1154.00	973,00	976.00	988.00
Average gain per steer per day, lbs.	1.98	2.52	2.29	1.76	2.33	2.11
Grain consumed per steer per day, lbs.	25.20	24.60	24.60	24.97	23.02	22.83
Average roughage consumed per steer per day, lbs.	5.50	6.80	6.20	8.91	8.87	8.89
Grain consumed per lb. of gain, lbs.	12.97	9.77	10.77	14.19	9.88	10.83
Roughage consumed per lb. of gain, lbs.	2.78	2.70	2.72	5.06	3.85	4.21
Total food consumed for 1 lb. of gain, lbs.	15.75	12.47	13.49	19.25	13.73	15.04
Cost of 100 lbs. of gain	$9.31	$7.87	$8.59	$10.49	$7.64	$8.26
Value of pork produced as a by-product for 100 lbs. of gain on steers	1.00	0.84	0.68	2.30	1.31	1.86
Net cost of food per 100 lbs. of gain	8.31	7.03	7.91	8.19	6.33	6.58
Net profit or loss per head including pork	*$0.57	*$1.43	*$0.47	†$3.94	*$1.65	*$1.32
Nutritive ratio by lots	1:8	1:7.3	1:6.8	1:8.8	1:8.2	1:7.6

*Profit.
†Loss.

I had another chart, in which I had a comparison of corn and prairie hay with oil meal, and without oil meal. I will say, that in three years' experience, feeding corn and prairie hay with or without oil meal, we have been getting the best gains by the use of oil meal. We found the gains were strongly in favor of the use of oil meal with prairie hay and corn. Figuring the oil meal at $30.00 per ton and prairie hay at $6.00, we have been able to cheapen the cost of producing beef about 11 per cent. We figure we can afford to use oil meal when the cost does not exceed $45 per ton.

Now, the table that has been last shown you, you will observe, by reference to the table, that we fed during one experiment, shelled corn, 75 per cent, bran, 25 per cent, with prairie hay, and in the other column, shelled corn 90 per cent, and oil meal 10 per cent, and in the next one we have shelled corn 90 per cent, cotton seed meal 10 per cent, and of course, with prairie hay in each case.

The second year the roughness was corn stover, and the corn bran and oil meal in the percentage as indicated by the table. We have to use more bran, because bran is not nearly so rich in protein material.

No dobbt, the reason we get so much better gains by the use of oil meal, rather than corn and prairie hay alone, is because the oil meal furnishes the protein, which is lacking in corn and prairie hay or timothy hay. Now, in this comparison with wheat bran, linseed meal and cotton seed meal, the average gain per steer per day the first year is, shelled corn, bran and hay, 1.98; on shelled corn and oil meal, 2.52; shelled corn and cotton seed meal, 2.29.

You will notice the next year we fed those rations throughout the entire period of twenty weeks; that year, instead of feeding prairie hay, we fed corn stover. In the cost of production, we figured oil meal at $32 a ton and bran at $15, and cotton seed meal at $32. The first year, the cost of producing 100 pounds of gain on the bran was $9.31, and on the oil meal it was $8.59. The next year, as disclosed by the table, the cost of producing 100 pounds gain on the bran was $10.49, and on the oil meal $7.64 The cost of producing gains, therefore, was greater with bran. We have found oil meal somewhat superior to the cotton seed meal. But this experiment will be carried on farther, and it may be we will obtain better results this winter.

QUESTION: I would like to know the percentage of protein in the cotton seed meal that you use?

PROF. SMITH: It was right around 31 or 32; it was higher than the oil meal.

QUESTION: Did you use this in the finishing period?

PROF. SMITH: In one experiment we used it in the finishing period in the other during the whole period.

QUESTION: What time of the year?

PROF. SMITH: In the winter. I am thoroughly of the opinion that in cattle feeding, to make it profitable, we have got to feed some form of roughness. If you should withhold roughness entirely from a calf, you will find it becomes sickly and they very often die. I have in mind an experiment performed when I was at school, where a steer was confined without roughness. He ate the straw under his feet; we substituted sawdust, and he ate the sawdust. Beef production, to be profitable, presupposes the utilization of a certain amount of rough feed, which the hog cannot utilize.

I do not want you to think that I am saying definitely that oil meal is superior to cotton seed meal. I have simply given you the results of two experiments as indicated in these tables, at our station, and those experiments show slightly in favor of oil meal. I want you to accept that simply as the result of two experiments.

I am convinced that bran is not a very satisfactory feed, especially in the way we get it to-day; so much of the nutrient being taken out and going into the shorts; the bran to-day is not what it was a few years ago.

QUESTION: I am feeding some steers weighing on an average 1100; they get all the prairie hay they want; how much oil meal would you give them?

PROF. SMITH: The amount of oil meal would depend on the price of the corn.

THE MEMBER: The price of corn is 35 cents.

PROF. SMITH: At that price, I would feed more oil meal. We have been feeding in this experiment about two pounds of oil meal per day. In reporting the test of ten per cent, that made it about two pounds per day. This year, with high priced corn, you might find it more profitable to increase the oil meal to 2½ pounds per day. I think two pounds a day wouldn't be far wrong.

QUESTION: About what are the protein contents in the standard oil meal?

PROF. SMITH: I always give that in terms of digestible protein —right around 29 per cent.

QUESTION: And in the cotton seed meal?

PROF. SMITH: About 31 to 32. It looks a little inconsistent to think that coton seed meal is higher in protein, and yet we have gotten better results with the oil meal. The only explanation I can give is, that the steers relish oil meal better than cotton seed meal. We find they walk up to the racks with a little more enthusiasm, and I believe the difference we get is due to the higher palatability.

QUESTION: Which do you find is the most loosening on the bowels?

PROF. SMITH: I haven't noticed much difference. We do not find that in either case they are too laxative; the bowels seem to be in good shape most of the time.

QUESTION: Have you conducted any experiments with molasses feed?

PROF. SMITH: No. I think we ought to deal with the form of food that is constant. When you are out of that material on the farm, then it might be well to take up secondary material.

The trouble with these molasses feeds and feeds of that nature, they are not the same from one year to the other. Oil meal is constant, and so is bran.

We will take up next a thing I think will interest you. I have shown to you, I think, by these experiments, that if you are feeding corn and prairie hay, or corn and straw, something like oil meal is desirable, or cotton seed meal.

Can we get along without the commercial protein food, if we have alfalfa hay?

I will direct your attention to the following table:

TABLE IV.—*Linseed-meal versus alfalfa.*

	Feb., '06, to Apr., '06,—8 weeks		Nov., '06, to Apr., '07,—20 weeks	
	Corn 90%, linseed-meal 10%, and prairie hay	Corn 100%, alfalfa hay and prairie hay (equal parts)	Corn 90%, linseed-meal 10%, and corn-stover	Corn 100%, alfalfa hay and corn-stover (equal parts)
Average initial weight per steer, lbs.	1187.00	1164.00	976.00	978.00
Average gain per steer per day, lbs.	2.52	2.29	2.33	2.42
Grain consumed per steer per day, lbs.	24.60	23.20	23.02	22.33
Roughage consumed per steer per day, lbs.	6.80	8.10	8.96	9.77
Grain consumed per lb. of gain, lbs.	9.77	10.16	9.88	9.22
Roughage consumed per lb. of gain, lbs.	2.70	3.55	3.85	4.03
Total food consumed for 1 lb. of gain, lbs.	12.47	13.71	13.73	13.25
Cost of 100 lbs. of gain	$7.87	$7.40	$7.64	$6.99
Value of pork produced as a by-product for 100 lbs. of gain on steers	0.84	1.07	1.31	1.53
Net cost of food per 100 lbs. gain	7.03	6.33	6.33	5.46
Net profit per head including pork produced from droppings	1.43	2.53	1.65	6.38
Nutritive ratio	1:7.3	1:8.7	1:8.2	1:8.7

It will be noticed, that in one case the protein was supplied in the form of a concentrate; in the other, in the form of roughness, forming one-half of the whole feed.

In the first column we have 90 per cent corn, and the rest, 10 per cent linseed meal. In the next we have corn, 100 per cent and alfalfa hay and prairie hay equal parts. On the corn, without the linsed meal, using alfalfa hay, the gain per steer per day was 2.29. In the next year, for the whole period, we get a slightly larger gain by the use of alfalfa. The cost of producing 100 pounds of gain, in the first experiment, with linseed meal, was $7.03: the cost of producing 100 pounds without the linseed meal was $6.33. In the second experiment, the cost with linseed meal is $6.33, and with alfalfa without the meal, $5.46.

We have found, therefore, that we can get good gains when alfalfa forms at least half the roughness, even though no commercial protein food is fed. This experiment figured out shows, that with linseed meal worth $30 per ton, as a source of protein, alfalfa is worth $13 per ton, in comparison with it. We have found that alfalfa at $13 per ton is just as valuable an adjunct to corn, as linseed at $30.

I have no data on clover yet. But the conclusion to be drawn from this is, that you can grow your own protein on the farm in the form of alfalfa or clover, a good deal cheaper for cattle, than you can buy it on the market in the shape of commercial food.

QUESTION: Have you had any experience in grinding flax?

PROF. SMITH: No; we have never tried it; but judging from the composition, I will say ground flax is just the same as linseed meal, with the exception that linseed meal has less oil and slighter higher protein contents. If I were to select from the two foods to supplement corn, I would select linseed meal in preference to ground flax.

QUESTION: Don't you think that the improved machinery they now have in grinding flax, throws less feeding value in it?

PROF. SMITH: I don't know, I am sure.

Let me now review briefly some of the points gone over: First of all, we have shown that alfalfa, fed with corn, is very much superior to prairie hay. We may, I think, safely take it for granted, that clover fed with corn is very much superior to timothy, millet or straw.

The other point is this: Valuable as these protein foods are, we can get along without them, if we have clover and alfalfa. We have been careful enough to make it pretty safe to assert, that we are producing beef in Nebraska the cheapest on a ration consisting of corn, alfalfa and the bi-product upon which the corn grows—stover. I am not prepared to say just yet which is the cheapest feed, corn on the stalk or from the stalk. I believe it is cheaper to take it from the stalk.

We have been carrying on a test this year in which we have fed a heavy feed of grain, as compared with a light feed of grain and roughness, alfalfa and stover. We have fed one lot a full feed of corn, and we fed another lot 14 pounds of corn per day. We find that on those two-year old steers, taken from the range, weighing 900 pounds to begin with, we get exactly the same gain; we get exactly the same gain during the six months on these light fed cattle that we got on the heavy fed cattle; we got a gain of exactly 2 pounds per day.

The question is, which is the more economical for the farmer, a heavy feed of corn, or a light feed of corn. Last year we found we made a little cheaper gain by the heavy feed; but if alfalfa had cost $5 per ton instead of $8, the cost would have been identical. If corn had been worth 50 cents per bushel instead of 36, we would have produced gains just as cheaply on the light feed as on the heavy feed.

Now, the limits are somewhere between these figures. This single experiment goes to show that high priced hay and low priced corn made a better full feed. If you have a low priced, good quality of hay, alfalfa or clover, and corn is high, make your beef on less corn and more hay, even if it takes more time.

Let me say in conclusion, that I was surprised myself, when we found that we got just as good a finish on those steers which had only 14 pounds per day, as we did on the 20 pounds per day. Those steers that were fed 14 pounds per day were shipped to the Omaha market and brought just as much as the other steers did. It simply suggests to me this possibility: if we are careful to put up good quality of alfalfa or clover, and feed it right, we can make beef cheaper than we have been making it. Let us no longer neglect the roughness; do not feed some old, rotten strawstacks, but give your cattle a good quality of roughness with the corn.

THE PRESIDENT: The next on the program will be "Failure with the Oat Crop in Iowa; the Remedy," by the Hon. John Cownie.

MR. COWNIE: Farmers of Iowa: I desire to assure you that it gives me sincere pleasure to meet so many live-stock shippers as I see this afternoon. For more than an average life-time, in the state of Iowa, I have been feeding and shipping stock to Chicago. Many is the night that I have spent in the caboose with fellow shippers. I have eaten with them, slept with them and drank—water it was. (Laughter.) My whole sympathies are with the feeders and shippers of this state. We can raise cattle and fatten them; we can raise hogs and fatten them, and we can do it, as we believe, with a profit; but when we get them to Chicago, there are other parties who have a say, and what we had figured on as a profit, we are liable to come home to figure up to loss.

When I was invited to address this meeting, on the subject of the Oats Failure in Iowa, the question came to my mind, whether I would sit down and surround myself with books on agricultural chemistry and prepare an address that would appear very learned, and make you all believe I was a scientist, or whether I would drop the books and simply give you some of my own personal experience. I chose the latter.

I had intended to come before you and give you a talk on this subject, but your secretary sent me a communication asking for a copy of the paper I was to read, and also my photograph. I was so highly honored by thinking my photograph would appear in the paper, perhaps, that I decided to write a paper, in order that my photograph might accompany it.

In the criticisms I shall make in regard to the work as it is usually done in Iowa, I do not want one of you to consider for a moment that it is personal. You all do your work well. It is the man who does not attend these meetings I am referring to. But if any of you chance to find in my remarks something that fits yourselves, and that you would like to criticise me, I want you to bear in mind that my fighting weight is 238 pounds, and that I never felt better in my life than I do to-day. There is one advantage in a written paper; you always know when to stop, and I shall stop just as soon as I get through.

FAILURE WITH THE OATS CROP IN IOWA—THE REMEDY.

BY JOHN COWNIE.

With land rapidly advancing in value, and the cost of operating a farm increasing from year to year, it would seem that more attention would be given to details in the growing of crops, and that scientific methods should take the place of the haphazard system that unfortunately has been altogether too common. No one familiar with the conditions as they exist will deny that the oats crop in Iowa for many years has been far from profitable, and the object of this paper is to call attention to some of the reasons for the failure of this crop and to suggest a remedy.

The physician, when called upon to visit one who is sick, makes diligent inquiry as to the condition of the patient, and endeavors to ascertain the cause of the trouble, for on the successful diagnosis of the case the recovery largely depends. In like manner I will endeavor to point out some of the causes for the repeated failures in the oats crop, by referring to conditions that actually exist, the object of which is known to every observing person.

In a systematic rotation, necessary to secure the best results, the greater part of the oats crop follows corn, and it is certainly not surprising that failure should result when the conditions as regards seed, preparation of soil and other requisites are carefully considered.

While in the breeding of animals and even in the selection of seed corn, care is taken to secure the best, no heed is given to the quality of the oats used for seed, the great majority of farmers not even using a fanning mill to remove the light grains and the foul seeds, but sowing the oats as they came from the threshing machine.

Cattle are allowed to wade in the mud in the cornfield when the ground is soft in the spring, causing lumps to form when the ground dries, and no attempt is made to have the surface of the soil smooth and even before seeding.

The eleven-foot seeder, which is in common use, bounces over the inequalities of the ground, doing very imperfect work and distributing the seed so unevenly that no amount of after-work will secure an even and uniform stand.

The seeder is followed by the disc harrow, the blades of which are dull and rusted, and the great majority of farmers have not yet learned how to use this implement in a proper manner as evidenced by the appearance of the oats field throughout the state, when the young grain shows above the ground in a rather successful attempt to imitate in living green, our national emblem, with its stars and stripes.

One or at most two strokes of the harrow after discing is considered sufficient, and then the soil, the showers and the sunlight are depended upon to bring forth a bountiful yield. And with favorable climatic conditions an excellent crop is often secured, and the farmer, failing to realize that fortune favored him, not on account of, but in spite of his slipshod methods, congratulates himself on his success, and turns a deaf ear to all who urge more care in the preparation of the seed, and a more thorough cultivation of the soil.

In due time the oats are cut and bound, the self-binder making this easy work in comparison with former methods, but with all the levers for the adjustment of the different parts of the harvester, too often the sheaves as they drop from the machine are fearful and wonderful in their shape and appearance. The adjustment of the reel in the varying conditions of the grain in going on the level and up and down hill receives scant consideration and as a result a square butted sheaf is the exception instead of the rule, as it ought to be. The binder also requires a watchful eye to insure the placing of the band in the proper place, but as a rule too little heed is given to the handling of the levers and anything but a neat, compact, square butted, well balanced, tightly bound sheaf is the result.

These bundles, by courtesy called sheaves, are then thrown in a heap, known as a shock, and as a rule they are a shock to the nervous system of any one who appreciates neat, artistic work, in performing the necessary labor of the farm.

The shocks are allowed to remain in the field, exposed to the weather, be it dry or wet, it matters not, they must wait until the threshing machine arrives, be it early or late. And I need not add, for you all know, that millions of dollars have been lost to the farmers of Iowa within the last few years by the indefensible custom of threshing from the shock, rather than stacking the grain in a proper manner.

Having outlined briefly the methods pursued in the production of oats, not by all the farmers of Iowa, but by the great majority, I will now call attention to a method by which far better results will be secured.

In the first place good seed is imperative and the best oats that can be had should be procured and they should be thoroughly cleaned with the fanning mill, eliminating all light grains and foul seeds, leaving only for seed the plumpest and heaviest kernels.

As the quality of the oats the present season is very inferior and light in weight, it might be advisable to procure seed oats from localities north of Iowa, being sure that they had been well kept, sound, of good weight, and free from foreign seeds.

Oats for seed, as, in fact, all other seeds, should be harvested while they are somewhat green, as they have more vitality than when fully ripe, and if they are put in well erected open shocks as soon as cut and properly cared for, will give a much more vigorous growth than when they are allowed to stand in the field until the substance in the straw that has fed the kernel is exhausted.

In man, as well as the lower animals, the young and vigorous are much more potent than the aged, and what is true in animal life is equally true in plant life.

To digress while on this subject for a moment fears are entertained by many that owing to the backwardness of the season and the immaturity of the corn crop much of the seed corn saved this season will fail to germinate. No fears need be entertained on account of the corn not being fully ripe when the stalks were killed by the early frost, provided that the seed corn was gathered prior to the middle of October and at once placed on racks and thoroughly dried by artificial heat. The most vigorous seed corn I ever saw was gathered when it was hard; roasting ears placed in a room where there was artificial heat day and night, and so thoroughly dried that the kernels resembled pebbles in hardness. Not a single kernel of that seed corn failed to germinate and produce a strong, healthy stalk, and in this connection it might be recalled that while we had probably the best corn crop in 1906 ever harvested in Iowa, the quality also of the best, largely grading No. 2 in Chicago, our seed corn the present year proved far from satisfactory, as there was not to exceed two-thirds of full stand of corn in the state. This condition no doubt resulted from neglect in saving seed corn in a proper manner and this neglect cost the farmers of Iowa millions of dollars the present year.

But I repeat that the immature corn of this year's crop if saved as indicated, can be depended upon to germinate 100 per cent in the spring of 1908.

Those of us who never have any trouble in regard to our seed corn failing to grow, select the finest ears we can find in the field, from the strongest and most vigorous stalks. We select it while it is yet green and fire dry it as rapidly as possible and if the oats intended for seed are selected from the best of the crop cut somewhat green, put in long shocks properly built, and in due time securely stacked, and allowed to remain in the stack two or three months before they are threshed a much better quality of seed than usually sown will be secured.

With good seed thoroughly cleaned all light grains and foul seeds eliminated, the next question is the preparation of the soil. Under no circumstances should live stock be allowed in the cornstalk field when the ground is soft, and it is labor well spent to give the stalk ground a single stroke of the harrow crosswise of the rows as left when last cultivated.

As usual, after the corn has received the last cultivation, the corn row is somewhat ridged, and if the oats are sown, without leveling the ground, the seed rolls to the lowest plane in the row, being too thin on the corn row and too thick in the space between.

To prevent this condition, before seeding the ground should be leveled by one stroke of the disc harrow, following the corn rows as left when last cultivated and by careful driving and taking three rows at a time, the ridges will be cut down, the loose soil turned into the low places and the seed as it drops from the machine will lie where it falls, this insuring an even distribution of the seed, which is all important in securing the best results.

As to the amount of seed to be used much depends upon the condition of the soil and the weather that follows. The best crop of oats I ever raised, four bushels of seed was sown, but the growth was so heavy that had clover and timothy been sown with the oats the seed would have been wasted. Every farmer should study the condition of his soil before determining the amount of seed, and if clover and timothy are sown, less seed must be used than if the only requirement is a crop of oats. However, I am not in favor of thin seeding, trusting to the stooling to give a sufficient stand, as the stalks directly from the seed are much more vigorous and far stronger than are the shoots or suckers from the parent root.

After seeding the ground should be disced crosswise of the way in which the seeder was driven, and here let me enter a most vigorous protest against the common method of single discing. In use, the disc harrow throws the soil from the center towards each end, with the result that the seed is doubled at the ends with little or none left in the center, and no amount of cross harrowing will restore the seed to its proper place or leave an even surface.

You have all seen the wavy appearance of our oats fields in the spring, caused by single discing, and if cross disced the result is the wavy appearance both ways instead of one way. Any farmer who paints his fields in living green in this manner ought to be ashamed to show himself in public, and if he has any respect for the high calling he professes to follow he should take himself at once to some occupation where careless work and heedlessness will not be so indelibly stamped upon his work.

By lapping the disc harrow one-half and driving carefully, allowing the outside disc to turn over the small strip left unturned in the center of the preceding round, an even uniform surface is secured, and if the seeding has been properly done there will not be a single streak in the field.

But it requires careful driving to hold the outside disc exactly in line at all times, turning over the uncut center strip, for if the disc is allowed to vary, even slightly, a depression or ridge is made, proving at once the incompetency of the driver.

The double discing should be followed by thorough harrowing and the more of this the better, not one or two strokes, but four, five, or half a dozen, crossing and crossing again until the ground is perfectly smooth and also well packed.

In dry weather it is advisable to follow the harrow with a crusher or roller, and this is especially true if grass seed has been sown with the oats.

I have already referred to the careless manner of handling, or rather the failure to handle promptly and in a proper manner the several levers of the self-binder and I will add that with standing grain the reel as a rule is allowed to hang too low and too far back to insure a square butted sheaf.

Long shocks containing a dozen sheaves are to be preferred to round shocks, and in building the shock the sheaves, one in each hand, should be grasped firmly by the hands, and placing one on each side of the knee, the butts of the sheaves should be brought down with force upon the stubble. With a hand on each side, the tops of the sheaves should be brought closely together, the opening through the center of the shock being of sufficient size that a twelve year old boy could crawl through without moving the sheaves.

Shocks put up in this manner dry out quickly, even after a rain, thus enabling the farmer to get his stacking done at the earliest possible moment after cutting, and thus prevent loss by exposure to the weather.

While threshing from the shock may save some labor, it is a pernicious practice that has cost the farmers of Iowa millions of dollars, but notwithstanding all this loss it seems that as with saving seed corn in a proper manner, some people will not learn by experience, no matter how dear it may be bought. But it is not only the loss sustained by unfavorable weather, but the grain threshed from the shock is never so good as when properly stacked and allowed to stand for six or eight weeks before threshing, the sweating process taking place in the stack instead of the bin. Grain well stacked and allowed to sweat and dry before threshing is invariably brighter in color and plumper in appearance than grain threshed from the shock and will keep much better in the bin, being less liable to mold and keeping free from dust.

But while you are not giving audible expression to your thoughts, I know that you are agreeing with me in what I have said, but you are also saying to yourself, this is all very well, but what about oats lodging, which is the most serious condition with which we have to contend.

You have often heard it said, and you may have said it yourself, "My land is too rich for oats, and that is the reason for their lodging." But let me tell you that you never harbored a greater fallacy, for the fact is your land is *too poor* and this is the reason for your oats lodging. I do not mean that the application of barnyard manure to the soil will prevent lodging, for it will only increase it, but your soil is lacking in an essential element, absolutely necessary to give strength and stiffness to the straw.

Those of us who remember the first grain crops produced on the Iowa prairies can readily call to mind the strong stiff straw of those early days, the crop rarely lodging on the smooth prairie, the hazel brush land being the exception. Does any one believe that our land is richer today than it was when the first crops were produced, for is it not a fact that we have taken away from the soil many of the elements that had been accumulating for untold ages?

At one time I had a field bordering on a slough, the high land having been cultivated for years, but as the water level lowered a strip about three rods in width on the side of the slough was broken up and added to the cultivated land. It being desirable to seed the field in grass, the cultivated land that had been in corn the previous year and the new land, the first crop, remember, were both seeded with oats at the same time. All the ground was well cultivated, a fine growth was secured and to within a week of the ripening of the grain there was little perceptible difference in the appearance of the oats on the new and the old land. At that time a severe thunder storm occurred, accompanied by a strong wind and a heavy rainfall that leveled the oats on the old land as if a roller had passed over them and they were all cut "one way" with the harvester. But not one single stalk of the oats on the new ground broke down, the line being as distinctly drawn as was the furrows made by the plow in breaking the sod, the straw strong and stiff, standing erect, in striking contrast with the oats lying flat on the old land.

At another time I had a grove of timber standing in a cultivated field, a heavy growth of hazel brush covering part of the ground. The trees were grubbed, the hazel brush cut, piled in heaps and burned, the ground broken up and sown with oats and seeded with grass. With the exception of the spots where the brush was burned all the oats lodged, the standing grain indicating the exact location without question, and the exact size of the brush pile.

A neighbor attempted in the winter to move a dwelling house across one of my fields, but failed in the attempt, and the house was taken apart, the plaster being largely left on the ground. Several years afterward this field was sown in oats, and as is common, the crop lodged, the only exception being the ground on which the house was wrecked; here the oats standing erect, and the only difference as far as I could see being the old plaster left there years ago and which was still to be seen.

Being by nature of an observing disposition, and a sincere desire to learn and profit by experience, I determined on a series of experiments in an endeavor to add to the soil some element that would add strength to the oats straw and prevent lodging.

Hog manure consisting of the droppings and decayed corn cobs were tried upon a part of the field, horse manure on an adjoining plat, and manure from the cow yard on another plat, the field sown in oats, with the result that with the exception of the three plats that had been manured the oats stood up well. No difference was perceptible on account of the different kinds of manure used, all three plats being so badly lodged that it was impossible to secure more than half of the crop with the harvester.

It is needless to say that the corn crop that followed the oats on these plats that were manured made up for the partial loss of the crop of oats.

A number of years ago we were told by some would-be scientist that what our soil needed was salt, and the Chicago packers promptly offered the refuse salt after being used in the curing of hog products at a less price than the new salt could be bought for by the barrel. Several carloads were sold to the farmers in our neighborhood, but the results were not satisfactory. I did not purchase, believing that the salt having been used, had lost its savor, but instead tried a quantity of new salt without any perceptible benefit.

Having in my study of agricultural chemistry learned that silica gave firmness and rigidity to the stalks of grass, and the cereals, and not having at hand any powdered quartz. I tried an application of river sand to the heavy black soil, but the crop did not assimilate the cruder article, and the straw was no stronger than in other parts of the field.

Following up my experience with the old plaster and the ashes of the brush heaps, I mixed sand and lime together, applying the mixture to a plat of ground, having previously tried lime, as I had sand, separate, without results in strengthening the straw. The lime and sand mixed proved of as little value as they did separate and on calling the attention of a neighbor to the former result from the old plaster and no result from the lime and sand, he reminded me that I had omitted the hair always used in plaster.

On an adjoining plat of ground I applied a good coat of oak ashes that I purchased from the Amana Society in Iowa county, with the result that the oat straw was stiffer and stronger on this plat; of this there was no question. While that season all the oats stood up I was convinced that the oats straw had been strengthened by the potash in the oak ashes. It was of brighter color than the balance of the field, the grain was plumper and heavier and had it been possible to secure a supply of oak ashes at a reasonable price this experiment would have been continued on a larger scale.

It is well known to every student of agricultural chemistry that the three principal fertilizers are potash, phosphoric acid and nitrogen, and if the soil is deficient in either one of these, while having the others in abundance the crop must suffer for the lack of plant food, in other words, plants require, as well as animals, a balanced ration.

Much more could be written on this subject, but I have already exceeded the limit I had intended and it only remains for me to repeat again that our land is not too rich to produce oats that will not lodge, but it is too poor. And to insure strong, stiff straw that will stand up we must furnish the soil with the necessary plant food, in the same manner as we feed our young animals oats, shorts and bran to make bone and muscle, reserving the corn for fattening.

Phosphoric acid we still have in limited quantities in our Iowa soil, and this substance enters largely in the formation of the grain. Nitrogen that insures the growth of the stalk we can furnish by growing clover and the application of manure. Potash to give strength to the stalk, that lodging of the grain may be in a large measure prevented, is absolutely necessary, and it is for the lack of this plant food and not because our soil is too rich that the growing of oats has so often resulted in failure.

It is yet doubtful whether the purchase of potash in large quantities and its application to the soil would prove profitable, with the low price that usually prevails for oats, the present season being an exception.

But of the value of the suggestions in this paper as to seed, cultivation, harvesting and stacking, there is no question, and the farmer who follows the advice here given will not only reap a rich reward, but have the consciousness that he has risen to a higher plane as a farmer than he formerly occupied, and in adding to his own wealth he is at the same time advancing one of the greatest industries of the best agricultural state in the American union.

THE PRESIDENT: This closes our program for this afternoon. I desire to say on behalf of the audience, that we thank these gentlemen most sincerely for their addresses, which have been so highly entertaining, and the discussions following have been highly appreciated.

This meeting will reconvene this evening, at 8 o'clock, when I have no doubt a full and most interesting program will be carried out.

(Adjournment taken until 8 o'clock P. M.)

TUESDAY EVENING SESSION—8 O'CLOCK P. M.

THE PRESIDENT: Gentlemen, we will proceed with our evening program. I am highly pleased to announce that we have with us tonight, Dr. A. D. Melvin, head of the Animal Industry, of Washington, D. C. We are glad for the privilege of having this gentleman with us to-night. I am sure Secretary Wilson could not have pleased us better than to have sent him to address this meeting this evening. I now have the pleasure of introducing to you Dr. A. D. Melvin.

ADDRESS.

DR. A. D. MELVIN, CHIEF OF BUREAU OF ANIMAL INDUSTRY, WASHINGTON, D. C.

Mr. President: I have been taken rather an unfair advantage of in being asked to address you gentleman. I came here to listen what you folks had to say at your meeting and to ascertain whether there was anything in the live stock industry which the department could do for you to further your interests.

In the first instance, I wish to present to you the compliments of the Secretary, and assure you that he has the deepest and liveliest interest in the welfare of this Association. This is the first time I have had the opportunity of meeting with you, although in the several years that I have been connected with Secretary Wilson, he has frequently referred to this Association as one of the strongest in the live-stock industry in the United States.

Mr. Wallace suggested to me that I touch upon the subject of the inspection, more particularly, the meat inspection as conducted by the Bureau of Animal Industry, and I shall therefore devote some attention to this subject, in what I may have to say to you.

There has been a great deal of interest in this question in the last couple of years, on account of the great notoriety that was given our slaughter-houses and their methods, through the press, and in other ways, and nearly all of you, I presume, are familiar with the horrible conditions that were painted in the most lurid colors. Personally, I am able to say, that this coloring was very much exaggerated. I have been closely connected with the inspection for many years, and so far as the law has given authority to go, the inspection was well conducted, and in the houses where inspection existed, the meats were inspected in good shape.

We now have authority to require modern sanitary conditions, and re-inspection of the meats during the different stages of processing, regulating the preservatives which shall be used in curing meats and the labelling of the products. Many of these labels were really misleading as to the contents. That has all been corrected, and the work was a tremendous one.

Heretofore the work of inspection was not obligatory on the part of the packer, except with reference to exportation of beef. Only those who desired an inspection had it, on account of the small appropriation, and some who desired it were not able to get it. The new law provides that all who do an inter-state business shall have inspection. With respect to retail butchers and dealers supplying customers, and animals slaughtered on the farm by farmers, these exceptions are made on account of the tremendous difficulty it would entail in inspecting small houses and the slaughtering on the farms.

I am fortunate in having with me some figures to show you something of the magnitude of the work during the past fiscal year. There were in all 50,953,000 animals inspected on post-mortem examinations, of which there were 7,593,000 beef cattle, 1,757,000 calves, 9,672,000 sheep, 31,639,000 swine, and 52,000 goats; these I suppose went in with the sheep.

This work was conducted at 708 different establishments, in 186 different towns, and required the employment of 2,290 persons. All final post-mortems are conducted by veterinarians, who are assisted in part by experienced employes. The final passing on whether a carcass shall be condemned or passed, is in the hands of veterinarians.

The greatest cause for condemnation in the case of cattle and sheep is tuberculosis. .39 per cent of the cattle were condemned for tuberculosis; .25 per cent in whole, and .14 per cent in part. Of the hogs there was 1.04 per cent condemned for tuberculosis. .206 per cent were condemned in whole, and in .834 per cent in part. There were, of course, a very large number of animals that were slightly affected, which were passed entire. Now, these figures represent the number condemned entirely or some portion of them, in consequence of the disease.

Of the total number condemned of cattle 70 per cent were condemned on account of tuberculosis; the number of hogs condemned was 62 per cent, on account of tuberculosis. Of course, the cost of this has not been fully felt by the producer as yet. The one who sends in a lot of cattle and hogs,—a very large proportion of them are affected with the disease and condemned,—is to-day receiving the same amount practically for his stock, as the man who sends in entirely healthy cattle. So far, there has been no discrimination made between the breeder of healthy cattle and diseased cattle—you are paying for it. You are familiar with the story of the traveling man who lost his overcoat out on a trip, and he purchased a new one and put it in his expense bill. When the bill was presented to the house, it was promptly cut out. In his next trip he was unfortunate enough to have his overcoat stolen again, and it was again put in his expense account; there was no overcoat in that bill, and it was allowed, but it was in there just the same. That is the way these condemned animals are being charged up against you. You pay for them, only you do not realize it so much as if it were a direct charge.

The method of ante-mortem inspection is considerably different in different localities. In Kansas City, the inspectors are stationed in the stock yards, and whenever an animal is suspected of being in a condition to render it unfit for food, it is tagged, but the animal proceeds with the balance of the herd of cattle or swine to the slaughtering house which has made the purchase, and is slaughtered there, and the remittance is accordingly, whether it is passed or condemned. Practically the same system obtains in St. Joe and Omaha, although at these two places, they have an inspector appointed by, I think the Exchange and the packers jointly, who also tag the cattle and hogs. At these two places the government inspectors make out a report, giving the number of tagged and the reason for condemnation of the animal, and that is posted in the Exchange where every one can see whether the animal was in fact condemned or not. At Chicago, the system is very different. We have our inspectors in the yards, who inspect and tag, but through an agreement with the Exchange—I suppose you are familiar with this—these animals are then slaughtered at one particular place, and they are there inspected both by the Federal Government and the State Inspectors, and the remittance is made by the representative of the Exchange to the respective commission firms.

A great deal of complaint has reached the department from various sources with reference to this system in vogue in Chicago, and that was one of the reasons which brought me out here, to determine the feeling of the shippers with reference to the system in practice at that point. So far as I am aware, there is no complaint in either of the large packing centers with reference to the disposal of their ante-mortem condemned animals.

In the matter of meat inspection the government has gone as far as it can in that direction. It has no authority to extend the inspection beyond that which is subject to interstate commerce. When an inspection is inaugurated in an establishment, all the animals prepared in that place are subject to the same inspection, whether for inter-state sale or export. But the government cannot go into a town like Des Moines and establish inspection, that is, doing a strictly business within the state; and it is this inspection which must be conducted by states or cities, in order to perfect the system of inspection which will protect the consumer. It seems rather ridiculous for the national government to inspect about five-eighths of the animals slaughtered, unless the other three-eighths are also inspected by equally competent inspectors. It is absolutely necessary that either cities or states take up this work and complete what the Federal Government is unable to do.

The department has assisted, as far as possible, in eradicating tuberculosis, and in one way, has assisted by the free distribution of tuberculin to various state and city officials. It has not been given general distribution, because it was thought better that those desiring it should obtain it from their local officials. It has been alleged that tuberculin will produce tuberculosis in animals that are injected with it. I do not presume any of you are of that opinion. I may briefly state how it is prepared. The bacillus of human tuberculosis is taken, and with it bouillon or other media is infected. This is called a culture. The bacilli grow on the top of this fluid, looking like a mould. It is kept in retorts at a certain temperature, and when it reaches a certain degree of development it is shaken up and all sterilized, completely killing any bacilli which may be present. In addition it is filtered through very fine porcelain filters, and this main product which is filtered out is then the tuberculin which is injected into the cattle. If they are tubercular, it will give a definite true elevation of temperature, with the exception that in advanced stages of tuberculosis, they frequently give no reaction at all; there often, however, is a sub-normal temperature.

So you see, there is no possibility for cattle obtaining tuberculosis in this manner. In the eradication of tuberculosis there is one important fact, which all of you who are so unfortunate as to have infected cattle, should bear in mind. It is the height of folly to go to the expense of destroying your diseased animals, without you thoroughly disinfect all the premises with which they may have come in contact. We have demonstrated beyond the shadow of a doubt, that a very large number of bacillis are passed, with infected animals, to the hogs that follow them and in this way readily contract tuberculosis. This accounts in a very large measure for the very large amount of tuberculosis in hogs, particularly in corn districts, where it is a general practice for the hogs to follow the cattle.

Once tuberculosis is eradicated from the cattle herds, it will be very speedily eradicated of its own accord from hogs. This disease is really more prevalent in certain kinds of our cattle than most people imagine. Recently an exporter of high grade cattle, or, pure blooded cattle, to Argentina, required us, on account of the laws of Argentina to test these cattle that he was to ship. He bought those cattle subject to the test, and in every instance they were out of fine herds, and 50 per cent of these cattle reacted with the tuberculin test. To use his own words, the best cattle reacted. In recent work among dairy herds we found 18 per cent of the cows affected. In some instances this amounted to 100 per cent; in others, none, and in some very low, but the average per cent was 18. These dairy men had their cattle tested under an agreement with the department, that they would, in consideration of the free test, if they reacted but didn't present any visible signs, or physical signs, either segregate them and pasteurize the milk from them, in the event of their having calves, the calves to be immediately removed, and those that showed physical signs of tuberculosis were to be slaughtered; that was one of the provisions. They did this of their own accord to rid themselves of the disease, and because they did not want to sell milk from such cattle to people.

There has been quite an effort or agitation recently among a number of breeders of high bred cattle, to establish free herds; that is, herds that were absolutely known to be free from tuberculosis and guaranteed as such. I trust that such measures may be started, because it is only right, that any one who is selling high grade stock to go into a herd of some other man, it should be healthy.

This disease has been underestimated; it is one which has not developed very rapidly, as a rule, and the outward signs, for a long time are so slight, or often do not exist at all, so that unless one is very careful, animals may be diseased, and one not be aware of it In addition to this, we have been devoting a great deal of attention to the enforcement of the 28-hour law—that is the ordinary name for the law, although its provision allow an extension for 36 hours upon written request of the shipper. A number of convictions have been had under this law, and other prosecutions are to follow. It is thought, that by vigorous enforcement of this law, railroads would give better service in transporting to market. I believe it has improved the situation some, but has not accomplished what was expected, and it may be it would be better if a minimum rate of speed be required by the railroads in transporting live stock. This certainly would be a very humane thing. In long shipments the stock has to be loaded too often in reaching the markets.

We have a great deal of work which would be of interest to you, directly, in the way of the live stock industry. Our quarantine measures require careful inspection.

Much has been done in the way of dealing with and studying the manufacture of different kinds of cheese which have been made and brought in, as also our domestic cheese, as to the different ways and conditions under which it is kept in storage.

In animal husbandry, we have varied experiences in cattle breeding, horse breeding, poultry and swine breeding, and sheep breeding. This is done in connection with the experiment stations of the different states.

We have also constantly studied the different problems with reference to diseases and the cause of diseases, the best methods of eradicating them, where it is possible. Out Tick eradication in the south has caused a great deal of work and been of great benefit, as far as it has been carried out. These ticks, while conveyors of disease to northern cattle, are also very injurious to cattle in these southern countries. They become so numerous, they are a pest; they are blood suckers; they deplete the animal so that in many sections of the south cattle raising cannot be pursued to advantage. We have been at this work two years. The last Congress gave us $150,000; the previous one had given us $83,500, and up to date, something like 80,000 square miles has been eradicated and freed from the tick.

The President: I would suggest that some of our people here are very much interested in this problem, and would no doubt like to ask some questions along the line of inspection. So I will invite a few minutes discussion.

A Member: I came here to see our Railroad Commissioners, and secure information on a proposition touched upon by the speaker. I ship in and out from the farm frequently and come in contact with the law that is called the 28-hour law. My experience has been, in shipping from Omaha to Chicago, if the railroad company exceeds the 28 hours, the conductor will come to the shipper and demand that the shipper sign an agreement releasing the railroad company from responsibility in holding the stock over and beyond 28 hours. On this point I would like to ask for information. Who is held responsible for the care and feeding and the damage to this stock, is it the shipper or the railroad company? Our Railroad Commissioners can give me no information on this point.

Dr. Melvin: The law provides that live stock shall not be retained in cars without food, water and rest to exceed 28 hours, except in case the shipper, having made a written request to the railroad company, the time can be extended to 36 hours. Another provision is that sheep are not required to be unloaded in the night time, but will be hauled to the first unloading point during daylight. As to who is responsible for the feed and care of the stock, it is the railroad; it is in their possession, and if the stock does not receive food, water and rest while in their possession, they are responsible. If the owner does not take care of it, they must.

QUESTION: Who pays the bill?

DR. MELVIN: I presume the shipper.

QUESTION: Do I understand you that Chicago has a different inspection on suspected animals than other markets?

DR. MELVIN: If I said that, I conveyed the wrong impression. I did not mean the inspection was different; the manner of disposing of the tagged animals is different; the inspection itself is practically the same, made at the scales at the time the animals are weighed. At Chicago it is made after the animals are weighed; at other centers it is made before the animals are weighed. But the subsequent handling is different. At Chicago the animals are controlled by the state and live stock exchange, I believe, jointly; at any rate, the animals are slaughtered in one particular slaughter house under the supervision of the state inspectors, and the products are disposed of by the representative for the Live Stock Exchange, who remits to the various commission firms.

QUESTION: Then the exchanges at the other markets have nothing to do with the product after they are slaughtered?

DR. MELVIN: Absolutely nothing. The animals go to the various slaughter houses that have bought the balance of the cattle or hogs, as the case may be, and their returns are made accordingly as to whether the animals were passed or condemned.

A MEMBER: I suppose you were familiar with the dispute between the packers and the commission men at Chicago. At the time that quarrel was going on, the impression was quite general that a man shipping cattle had no assurance that healthy animals might not be condemned. It seems to me you would render a service to our people here by informing them whether there is any chance for the shipper suffering because of unjust condemnation?

DR. MELVIN: The inspection and disposal of any condemned animals in the packing houses where we have inspection, is absolutely in the hands of the federal authorities, federal inspectors. They have no object whatever in discriminating in any way. To avoid any discrimination, it would be a very simple proposition for each shipper to tag his animals. As I understand this subject of inspection was to be confined to she-cattle; that would eliminate a very large proportion of those slaughtered. Those she-cattle could have been tagged by the shipper, and in the event any of them had been condemned by the packing houses, the inspector in charge would post in the exchange a list of those tags, and the numbers or initials, whatever was placed on them, showing the cause for which they were condemned, in whole or in part—and it would have been absolutely above board; every one could have seen exactly whether his animals were condemned or not; if the number wasn't on the board, he would know they were not condemned.

THE PRESIDENT: I would like to ask if there is any reason why the same system in vogue at the other markets and centers, in regard to disposing of these suspected animals, should not be in vogue in Chicago also.

DR. MELVIN: No reason I know of. I suppose some one has a reason.

QUESTION: You mean to say the Federal Government has no reason for not putting that system in effect?

DR. MELVIN: No, sir; none whatever.

QUESTION: Is it necessary, in shipping cattle from one state to another to have them inspected?

DR. MELVIN: It is in some states.

QUESTION: In shipping from Iowa to Minnesota?

DR. MELVIN: In shipping from Iowa to Minnesota, so far as the Federal Government is concerned, there would be no permit required, but the shipment of animals affected with contagious diseases or inocculable diseases, is absolutely prohibited by law, and they couldn't be shipped under permit or any other way. This holds, with the exception of southern cattle, which are shipped and marketed for slaughter.

A MEMBER: I have had some experience with hogs in the last three or four months in our neighborhood. A disease broke out they called cholera and of course, different medicine men were on hand to sell their medicine. I had a veterinary come in and open one of them up and he found the trouble to be with their lungs. He also went across the road to another farmer and opened three in that yard that died that morning. The man took the balance and went to Chicago; they went straight. How do you account for that?

Dr. Melvin: It is a question whether these animals were condemned or not. There may have been some condemned and some passed. We find in some instances, particularly when they are shipping small hogs; in some instances there will be from 90 to 100 per cent condemned when they get into the packing house. This statement I have shows that during the past fiscal year there were 4,506 hogs condemned for hog cholera; so there have been a good many practicing the same thing.

A Member: We had another case, just about a year ago. A man loaded up his hogs and brought them into our town; on the road two of them died; they were thrown out of the wagon. He hauled the rest in and sold them to a butcher, and in the meantime he brought in another load and sold them to the shipper. When the shipper went to load those hogs, he noticed them staggering; the bank was closed in the meantime, too late to pay at the bank, and so in the meantime he called and took a veterinary down there, and there had three more died, and two or three more were sick. He notified this party that he would have to burn them up or bury them. Well, the party refused to do it. In the meantime there were eight of those left, but they were diseased, you could see that by their appearance, and from the way they acted. The shipper didn't want to get into a lawsuit, and held those hogs three or four days and shipped them into Chicago. I saw the bill myself when it came back for those hogs and they went through.

Dr. Melvin: I don't know where they were killed in Chicago, I am sure.

Question: I understand, they could have been condemned and the shipper knew nothing about it?

Dr. Melvin: He says the shipper received his pay for them. If he received the market value for them, the packer must have stood the loss.

Question: What is the practical method of disinfection in case of tuberculosis as to pastures?

Dr. Melvin: Practically nothing. The bacilli soon dies in the sun and air. Nature itself would soon disinfect it.

Question: If a cow is heavy with calf, isn't it the case they would react sometimes when they wouldn't otherwise?

Dr. Melvin: Yes, sir; we have found that to be true in a very large number of tests made. There were about three per cent really mistakes, that were made on account of advanced pregnancy.

where the udder would be inflamed, and conditions of that sort appear; but generally, if the veterinary is careful, he can discover the causes in these cases.

QUESTION: Isn't it also true that a cow in heat will react?

DR. MELVIN: In some instances, that is one of the causes.

QUESTION: That would make it quite dangerous for a feeder to have his cattle inspected?

DR. MELVIN: No, he could defer the time in these particular instances and have it done at a later period, or if the test has been made, have them re-tested in the course of six or eight weeks.

A MEMBER: We had a breeder sell a young bull to go to South America; he was tested and reacted; a year after that he was tested and passed all right. What was the cause of that?

DR. MELVIN: I wouldn't be able to state. There may have been some local condition which caused the reaction in the first place: or, it might be the test wasn't carefully applied, or something of that sort.

THE PRESIDENT: I expect we had better close this discussion for the present. I am sure we have all appreciated the remarks of Dr. Melvin and the information he has given us along this line. It no doubt has been very beneficial, many points having been brought out that some of us were no doubt not familiar with.

THE PRESIDENT: The next number on our program this evening is the *"Transportation Problems Affecting Iowa Agriculture,"* by Clifford Thorne, Washington, Iowa.

Most of our people have heard of Clifford Thorne. He made a record at the state house last spring, before the Iowa Railroad Commissioners, in securing a reduction of freight rates on live stock in this state, of 18 per cent. We are glad for the record this young man has made, and I am glad to have the privilege of introducing him to you tonight.

TRANSPORTATION PROBLEMS AFFECTING IOWA AGRICULTURE.

CLIFFORD THORN, WASHINGTON, IOWA.

Mr. President: This is a pleasure, to have the opportunity I have this evening, and I suppose, of course, that pleasure will be all mine—like the gentleman who was requested to attend the funeral of his mother-in-law.

The *agricultural interests* of this state, and the *Iowa interests,* are synonymous terms. At the last census the total value of farm property in this state amounted to over one billion eight hundred million dollars; that was an increase of 66 per cent over the census ten years before, which was an increase of 50 per cent over the census returns of the decade previously. The last census returns showed the gross value of all your agricultural products in this state, exceeded any other state in this Nation.

This evening I am talking to representatives of the most important industry in the greatest agricultural state in America. My topic concerns the most widely discussed question of the day, the railroad problem. Just at this time we must keep in mind the tale of "The Goose and the Golden Egg"—during these financial troubles—and remembering that, let us consider some of the phases of our subject.

The farmer occupies a peculiar relation toward the railroads. Why do you differ from other shippers? Simply, because of the character of your business. A reduction in the rates on dry goods or dressed meats, increases traffic of that character. When a manufacturing establishment is seeking and negotiating for a location, or new business, one of the first things the officer does, is to investigate the condition of freight rates. If he can succeed in impressing the proper railroad official that lower rates mean more business, the factory gets a reduction. When you are negotiating for the purchase of a farm, do you investigate and find out what the rates are? Under ordinary circumstances, you do not do so. The average railroad official knows that any particular farm will produce practically the same tonnage, whether Tom Jones or Nancy Hanks owns it.

Another difference between the factory and the farm is, that the factory usually controls a larger amount of products under a single management. The average Iowa farm in 1900, turned out $1,598 worth of products; while the average Iowa factory turned out $11,108 worth of products. The average Illinois factory turned out 32,839 worth of products. The factory that produces products amounting to hundreds of thousands of dollars, is the one that has the greatest effect on freight rates.

Again, a factory can locate at strategic points. It generally locates at a junction of two or more railroads. A farm is generally on one or a few roads, or some distance away from a road.

Another difference between the factory and the farm is, that the factory can change its location, if the roads do not give favorable rates; it can pick up and move to some favored locality, and it generally gets the cost of removal paid by those interested in the new location. The farm cannot change its location.

These differences between the factory and the farmer have had a remarkable effect on the freight rates in this section of the country.

We are confronted with the fact that there are no natural laws of business which protect the farmer in regard to railroad matters. Practically every reduction that has been brought about on farm products during the past generation, has been done by government interference. Is it strange that the pioneer steps in all these movements for government regulation should originate with the farmer? It is the natural place for them to originate. And now, while you are interested, let us take a general survey of the situation, and see what problems still confront us.

You have heard a great deal about rebates lately; that topic has attracted wide attention. A few years ago, a member of the Interstate Commerce Commission, an attorney for the Cattle Raisers Association, and the governor of a great state, and several other gentlemen who command public esteem, testified before a Congressional Committee, that the Elkins law had destroyed all rebating. But scarcely had the sound of their voices died away, when exposures in New York and Wisconsin disclosed the fact that rebates amounting into the millions of dollars were still being given and received annually. While this is a great question, to my mind, there is a far greater one.

I am told that the railroads are discriminating in the furnishing of cars in the state of Iowa. I know that the farmer located at the junction of two or more lines can obtain his cars much easier than the man upon a single road. When a shipper delays a car several days, he pays damages by the day. When the railroad delays the shipper several weeks by the failure to furnish cars, causing a loss of hundreds of dollars to the shipper, the railroad pays nothing. This situation is outrageous and must be rectified; and important as that question is, yet to my mind, there is still a greater one.

A few months ago a prominent candidate for President of the United States, a member of the Supreme Court of the United States, and several United States Senators came out in published statements, that in their judgments the railroads of this country were not over-capitalized as a whole. Those gentlemen have won the confidence of the public. If their statements are correct, there is absolutely no use to make a valuation of all the railroads of the United States by the government. If their statements are not correct, they should be among the first to retract them, because, the

American people have made up their minds they do not propose to pay interest on watered stock. The President himself has expressed that view—that "the public will not tolerate efforts to make them pay dividends on watered stock." Public interest justifies us in demanding to know the authorities for the statements made by these honorable gentlemen, that American railroads are not over-capitalized. Your first question is: are there any authorities? Not such an authority as the honorable member of the Supreme Court who sits in his office in Washington, D. C., and makes a valuation of all the railroads in the country at one huge guess. I am informed that at the present time a gentleman is employed in making a valuation of all our railroads. Immediately after his task is finished he is to be given the presidency of a large eastern railroad; and when that report comes out, it will be heralded all over this country, notwithstanding his unquestioned bias. Are there any investigations actually made, of the valuations of the railroads that are unprejudiced; made by men who have gone out into the fields and obtained the real facts as they are? Yes, there are some already made. A few years ago the Texas Commission made an exhaustive investigation, and they found that the railroads in that state were capitalized at more than double their actual value.

Last year the legislature of Minnesota appointed a committee to make a similar investigation. Their report shows that the railroads in that state are capitalized from 15 per cent to 400 per cent more than their actual value. One of the railroads was capitalized at five times its value, and the president of that road testified, that in some of their stock there "was what might be called water." Until we find out the actual value of railroads, how are we going to determine reasonable rates? Even though we show the rates that the Iowa people pay are higher than those paid by the people of Illinois and Missouri how do you know the latter are not too high? Until you find out the valuation of the railroads, you are merely scratching the surface of the railroad problem.

Great and important as the matter of over-capitalization is, to my mind there is still a greater one. Let us consider the matter of rates for a few minutes. Railroads are built to make money, and the way they make most of the money is out of freight rates. They are sellers of transportation; you are buyers. I have a simple business proposition I want to make which I think you will accept, no matter which side of the controversy you are on. It is this: It is to the interest of the railroads to charge just as high rates as they can, provided these rates will not interfere seriously with business activity; on the other hand, it is to the interest of the public generally to obtain this service for the lowest rates which do not seriously interfere with railroad activity. Here you have a plain, clear-cut conflict of interests. There is no use trying to dodge it or get around it. It seems to me that is the situation of the buyer and seller over and over again. The seller wants to get as much as he can, and the buyer wants to pay as little as he can. It is to their interest to have high rates; to your interest to have low rates.

Now, what has been the course of the history of freight rates on your farm products? You people are interested in farms; you have to get your product to market. If I were able to show you that you have been paying for the past seventeen years, from 30 to 50 per cent more than the Illinois farmer who lives on the same railroad, the same distance from Chicago, in the same territory, to get your cattle to market, wouldn't that be something concrete and tangible? These matters are of importance. They affect the amount of money in circulation in our state; they affect farm values. Let us approach the question of freight rates from a purely business standpoint, leaving out all questions of general morality and politics.

During the past fifteen or twenty years there has been a great many reductions on all freight rates in the country. This has been made possible on account of larger engines, larger cars, stronger road-beds, and general equipment. For the figures you may examine the Inter-state Commerce reports and the Illinois reports on the average revenue per ton hauled.

This average in the state of Illinois was 24 per cent higher in 1891 than it was in 1906. In the United States there was a 22 per cent decrease from 1890 to 1905 on all traffic. In group 6, that is the Iowa group, there has been a decrease of 25 per cent. So we have the figures ranging from 22 to 25 per cent decrease on the revenue of all tons hauled a mile in Illinois, in group 6, and in the United States. What is the situation as to your farm products? A careful examination of the schedules in force in the state of Iowa, from January 1, 1890, to January 1, 1907, shows, that there has been absolutely no decrease upon wheat, flour, millet, flax seed, corn, barley and other grain and mill stuffs; horses, mules, cattle, calves and sheep. You are principally interested in live stock—but I want to say there was a small decrease in hogs along in 1893, and just about the same time there was an increase in cattle and sheep. This increase was made on the quiet. There is no record of any consultation whatever. Our commission, with the assistance of some learned railroad officials, when they made out the schedule per hundred pounds, in place of the rates per car, divided the former rates by the minimum weight of the car load, instead of the average weight of the car load. It was cleverly done. I desire to heartily congratulate the shrewd officials of the railroads who manipulated the deal. Over in Illinois, when a similar change was attempted, there was an elaborate hearing held, and I hardly need add, 200 stock men were present and numerous railroads were represented, and the live stock interests of the state were amply protected. Our present commission, after a lapse of fifteen years corrected that error the past spring. I don't know upon whose shoulders to lay the blame.

You have heard it said that in the state of Iowa the rates are lower than those of other states. Don't let anybody fool you by a comparison of schedules. The railroads in this state charge the full amount allowed by the maximum schedule. In Illinois more than half the traffic is carried on rates below the state schedule. The same is true in Missouri. You may also have heard that the Iowa classification is the lowest in the west. If you have lived in another state, you would have heard quite a different story. In that connection I want to read a brief sentence contained in an answer made by the Chicago, Milwaukee & St. Paul Railway, in a case heard in Illinois last year, which is as follows: ''It is admitted as a general fact that the classification of Illinois averages lower than any other classification in the Mississippi Valley.'' This statement was made over the signature of the officials of the road.

Let us take some concrete illustrations concerning rates, that might interest you. I have placed them in the form of a table, as follows:

RATES ON FRESH MEATS—BEEF, LAMB, VEAL, VENISON AND PORK LOINS.

Distance in Miles.	Under the State Schedule of Iowa.	Illinois.	
100	$32.00	$30.00	Iowa rate exceeds Illinois rate 6 per cent
200	46.00	39.20	Iowa rate exceeds Illinois rate 17 per cent
300	60.00	45.20	Iowa rate exceeds Illinois rate 32 per cent

RATES ON FRESH FRUITS—GRAPES, PEACHES, PEARS AND PLUMS

Distance in Miles.	Under the State Schedule of Iowa.	Illinois.	
100	$32.00	$23.40	Iowa rate exceeds Illinois rate 36 per cent
200	46.00	30.00	Iowa rate exceeds Illinois rate 51 per cent
300	60.00	34.00	Iowa rate exceeds Illinois rate 76 per cent

RATES ON APPLES—(Green, by Carloads.)

Distance in Miles.	Under the State Schedule of Iowa.	Illinois.	
100	$16.80	$16.00	Iowa rate exceeds Illinois rate 5 per cent
200	28.40	20.80	Iowa rate exceeds Illinois rate 36 per cent
300	40.00	24.20	Iowa rate exceeds Illinois rate 65 per cent

RATES ON LIVE POULTRY.

Distance in Miles.	Under the State Schedule of Iowa.	Illinois.	
100	$24.00	$23.40	Iowa rate exceeds Illinois rate 2 per cent
200	39.20	31.00	Iowa rate exceeds Illinois rate 22 per cent
300	50.00	34.00	Iowa rate exceeds Illinois rate 47 per cent

RATES ON FRESH BERRIES—(In Boxes or Crates.)

Distance in Miles.	Under the State Schedule of Iowa.	Illinois.	
100	$32.00	$24.00	Iowa rate exceeds Illinois rate 33 per cent
200	46.00	31.20	Iowa rate exceeds Illinois rate 47 per cent
300	60.00	36.00	Iowa rate exceeds Illinois rate 65 per cent

In handling berries, berry boxes become a necessity.

RATES ON BERRY BOXES AND CRATES—(Nested in Crates or Bundles.)

Distance in Miles.	Under the State Schedule of Iowa.	Illinois.	
100	$32.00	$14.00	Iowa rate exceeds Illinois rate 128 per cent
200	46.00	18.80	Iowa rate exceeds Illinois rate 144 per cent
300	60.00	22.00	Iowa rate exceeds Illinois rate 172 per cent

I might go on and give you hundreds of other comparisons, but what would be the use? There are thousands of rates in effect in this state. Last year President Stickney, in his address before you, estimated that if there was a rate for every town in the United States on every commodity hauled, there would be three trillion five hundred million rates in effect. What would be of value is simply this: an accurate statement as to the average revenue, the average rate on all commodities hauled in this state. The nearest approach to this is what we call the average revenue per ton mile. I find, if the report of your Railroad Commissioners is correct, that the average revenue for every ton hauled a mile in this state is 79 per cent higher than in Illinois. Perhaps you say, conditions are different in Iowa and Illinois. Yes, that is true. But does the difference in conditions justify such an enormous variance as that? And in connection with this I want to refer to the Iowa group of states, group 6, composed of Illinois, Iowa, Wisconsin, Minnesota, that part of the Dakotas east of the Missouri River, that part of Missouri north of the Missouri River, and that part of Michigan north of Lake Michigan. These states are substantially similar. I find, in 1905, the average distance haul for a ton in Iowa was longer than it was in the Iowa group of states; yet, notwithstanding that fact, I find the average revenue on every ton hauled in Iowa, was 31 per cent greater than in the Iowa group of states. The last report we have from the Inter-state Commerce Commission for group 6 is for the year 1905. Let us consider the Iowa report for the year 1906. We find the average revenue for every ton hauled a mile in this state is 54 per cent higher than the average revenue for every ton hauled a mile in the Iowa group of states.

These facts are appalling. For fear that the accuracy of my statement may be questioned I refer you to the 28th report of the Iowa Commission, pp. 100-101; 29th Ia. Com. Rep., pp. 98-99; 36th Ill. Railroad & Warehouse Commission Report, page 149; and the 18th Annual Report, of I. C. C., pp. 70 and 98.

Notwithstanding this situation in regard to the freight rates on Iowa farm products, I do not consider that the most important problem which concerns the Iowa agricultural interests at this moment; there is a still greater one.

You have heard a great deal about honesty lately—and some people claim these exposures we have had have hurt business. I am not surprised at this. If one of these great big wads of concentrated juicy rottenness gets a puncture, it is not strange that an odor arises. Yet, after all is said and done, I do not believe the average railroad official is any more dishonest than the average politician who talks about him. The matter of honesty or dishonesty is not peculiar to the railroad business. Of course, I don't think we should trust our railroad officials any more than we do our bank officials. I believe we should have their books examined periodically by experts. But there is no issue here; there is no disagreement between you and them. They agree that they ought to be honest, and, I believe, after an investigation you would find that railroad men are just as honest as you are. In nine cases out of ten they are doing precisely what you would do if you were in their shoes and had their brains.

But there is a far greater question, far more perplexing and profound. If the issue is not rebates, not discrimination, not excessive rates, not over-capitalization, what is it? Would you please tell me what is the cause of these bad sores, these cancerous growths on our industrial life? Now, while we are digging down deep into all the filth and mire we have uncovered the past few years, let us get down to the cause, if we can. It may hurt some, but in the long run it is best. If one of your children should develop a persistent hacking cough, would you be content to give it an occasional dose of soothing syrup? No; you would want to get to the seat of the trouble and remove the cause, if you could.

A few months ago I was walking down one of your streets with a representative of one of our large western railroads, and in the course of our conversation, I happened to make the remark, that there would probably be considerable rate legislation during the next few years. His reply was terse and to the point. He said: "That will all blow over in three or four years; these things come and go in bunches, like the measles." That remark presents the gravest problem. Why is it that nothing is accomplished except in the midst of a wide-spread agitation? The same thing that is happening to-day happened away back in the Grange times, and it happened again in the 80's; and if my friend's prophecy is true, it won't happen very much longer now, but will come back some time later.

Why is it that nothing can be accomplished except in times of agitation? Where is the defect in our present system? At present there are two agencies you resort to to protect your interests; one is the voluntary association, and the other your railroad commissions. Voluntary associations are splendid; they have done some magnificent work; their mission is fully vindicated by the work of the Corn Belt Meat Producers' Association.

The efforts of a voluntary association which seeks to act for vast numbers, is generally spasmodic in its activity. While interest is intense, men will join; they will attend meetings a few times and pay a few dollars, and then they will let their membership lapse. You are all acquainted with that situation in your various communities. It is unfortunate, but it is human nature. Then is it just to let the burden rest upon the few? Nine-tenths of the farmers leave this matter to the state. We are organized into what we call a government. They think it is the place of the state and national government to correct and care for such things.

Why is it nothing is done except by agitation? Agitation is undesirable; it unsettles business, makes panics and financial troubles right along, year after year. I could never pose as a reformer. Reform is better than standing still; but progress from year to year is better than reform.

Now, while interest is keen, can we not devise some way, some method, some means that will help to protect our interests after the agitation has passed away? Where is the defect in our present methods? I believe the commission system has proven a success as a tribunal for the determination of causes brought before it by outsiders. But I say deliberately, that I believe the commission system has proven a failure in its capacity to take the initiative on behalf of the public; and this failure can be ascribed with practical certainty to the fact that we place too big a task upon our commissions. We empower them and expect them to hear cases brought before them, and we also empower and expect them to take the initiative on behalf of the state in beginning proceedings and carrying them on. In other words, we expect our commissions to be judges, and jurors and witnesses and attorneys, all rolled into one—an absurd combination, wholly contrary to the entire spirit of Anglo-Saxon legal history; almost certain to prove a failure. And the natural result has been that these commissions have gravitated into judicial tribunals, or semi-judicial tribunals—many people object to the word *judicial* when speaking about railroad commissions.

Your present statute provides for your commission to take initiatory steps, just as though complaint had been filed. But where have your important cases originated? The work accomplished in the 80's did not originate with the commission; the work done when Governor Larrabee was at the State House did not originate with the commission. The work done last year in Illinois, when they effected a ten per cent reduction on practically all freight rates in that state, did not originate with the commission; it was commenced and prosecuted to the finish by outside sources. The express rate case now pending before your commission was practically ordered by the legislature. Your commissioners have authority over passenger fares; the reduction in passenger rates was not effected by your commission. As I said before, this authority giving the commission initiatory power is practically a dead letter in this state as well as elsewhere. Last year, when they reformed the inter-state commerce act, they specifically excepted that provision, and at the present time the Inter-state Commerce Commission has no jurisdiction to fix rates in the absence of a complaint.

Gentlemen, you have elected your tribunal to hear and determine the case, where are your witnesses and your counsel? It is to your interest to have low rates; to the railroad's interest to have high rates. How do you protect your interests; how do they protect theirs? Here are a couple of paper bound pamphlets. In these two volumes there are rates on from one to eight different commodities, between over a thousand towns in Texas and neighboring states, and several thousand towns elsewhere in the country. In other words, we have in these two books several million rates. They have been agreed to by over two hundred railroads; they are issued under the supervision of one man, Mr. Geo. W. Cahill, of St. Louis, Mo. Millions of rates on two hundred railroads under the general supervision of one man. I give you this as a simple illustration of the enormous organization which the roads in the southwest have effected. They are organized, and you are not. Each railroad has employes and counsel in every county and state which it traverses; each railroad has representatives on committees, rate experts and rate clerks by the hundred; they have freight traffic managers, general freight agents, etc., etc.—vast complicated machines, working in perfect unison, put together and operated by master hands at organization. The railroad interests to-day are protected by the keenest brains that money can hire. How are you protecting your interests? Did you ever investigate whether the charges you are paying are reasonable or not? When you go to buy a horse or sell a farm, you will stand and dicker and quibble by the hour, and you have been known to waste considerable time and nervous energy with the assessor, but when it comes to the paying of a billion dollars or so every year in freight rates, you, in connection with the majority of other shippers, sit around like bumps on a log and let the other fellow charge whatever he wants to. Why? Simply because, what is everybody's business is nobody's business.

Do not blame the railroads for protecting their interests. The railroad officials who fails to look after the interests entrusted to him, should get his walking papers. All I desire to say to you is, that we are a bunch of big fools if we do not protect our interests.

You should have rate experts just as competent and well equipped as the railroads have. There should be a transportation bureau supported by the state and responsible to the state for its work. These bureaus should make constant investigations; they should make annual reports, giving information of practical and concrete value to the shipping, manufacturing and producing interests of your state. They should give us comparisons of rates and conditions constantly. The Federal Government should have similar bureaus. The exposures of the past few years merely serve as eye-openers, and the lesson that we should learn is, that we must provide ourselves with the facilities that will prevent the recurrence of these evils. Unless you take definite steps with this object in view, you will witness the same course of events which followed the

Granger days, the same course of events that followed the days when Larrabee was Governor, the same course of events my friend, the railroad representative prophesied would occur. Don't deceive yourselves with the idea that you can take additional steps with ease; they will be opposed and bitterly opposed by the very men who you would naturally expect to oppose them—the industry of which we are speaking. It is the most vast, the most complicated organization that ever existed on God's footstool. These railroads build up and tear down cities and states. At the time of the last census, the gross value of the railroads and their equipment in this country was greater than the combined value of all the live stock, all the farm implements and machinery, all the manufacturing tools and machinery, all the gold and silver bullion in this country, added to the total capital of our national banks. In 1905 the gross earnings and income above operating expenses of the railroads was greater than all the gold and silver, corn, wheat, lead and copper produced in the country. The gross earnings were four times greater than the combined customs and internal revenue of the United States government. It would take more gold than there is gold coin and bullion in circulation, together with that in the national treasury to pay the net earnings and income of the American railways for one year—and this colossal industry has been built up within the lives of many of those whom you pass on the streets.

Our fathers who framed this government, never dreamed of this vast industry. We have not been studying government regulation, tariffs, banks and colonies for centuries and centuries. We have just began the study of the regulation of these railroads. This is the greatest subject that you men of this generation have to deal with. With this stupendous task, we are but babes and sucklings. We have not learned the alphabet as yet, and there are many who are determined we shall not learn this alphabet.

The vast magnitude and importance of this railroad industry justifies a department of our government second to none in the nation. It should be supplied with a force as large or larger than any other department of our government; it should unquestionably be represented in the cabinet; it should have branch offices in every large trade center in the United States. We have tax ferrets and revenue collectors and bank examiners by the hundred, but our freight bill is a greater tax to-day than all those put together.

We should go at this railroad question, not like a mob, from time to time, reducing rates because we can, but we should build up a comprehensive, well organized system under which we can act intelligently. Until such means are provided we shall have to depend solely on these voluntary associations and their magnificent work. Meetings should be held everywhere in the towns and hamlets. You should receive the support of the public press, notwithstanding the pressure which will be brought upon the editors to prevent this. Up to the present time, neither in the state or nation, have there been any additional material facilities provided above what we had in this state for the last thirty years; facilities which experience has demonstrated are insufficient.

The greatest transportation problem that confronts the agricultural interests of the present day, is not rebates, not discrimination, nor over-capitalization. The question before you is, how can you provide these facilities that will protect your interests in future years? You may not be able to get back millions of dollars that should have stayed on these Iowa farms, but we can save them in future years. It is well to lock the barn door, sometimes after the horse is stolen, that is, if you have another horse.

If you of this generation have the genius and the foresight to grapple this tremendous question, and get things down to a practical working basis, well and good; if you fail to do this, the experience of the past forty years in the middle western states proves that your success will be temporary. If you fail to do this, the agitation will blow over, and public interest will die down, and we will go to sleep for another generation or so; twenty years later we may wake up and we may not. It is up to you.

THE PRESIDENT: We have with us tonight a gentleman, while his name does not appear on the program, who represents an organization which at one time, in the state of Iowa, was very prominent; an organization which at least is remembered by our older members, and perhaps by some of the younger members—the days of the Grange in Iowa. I have the pleasure of introducing to you tonight the head lecturer of the National Grange, Mr. G. W. F. Gond, of New Jersey, who will address you for a few moments.

ADDRESS.

G. W. GOND, NEW JERSEY.

Mr. President and Fellow Farmers of Iowa: I realize full well that you have listened to two able addresses this evening, and what I would have to say, perhaps, might be wearing on your nerves. Perhaps it might be well for me to say at the outset, so that no one may begin to wonder when the end will come, that what I may have to say will be brief, realizing, as I do, that I could hardly get started on this great subject of organization, without occupying too much of your time this evening.

The last speaker has given you some very good ideas of what you are needing in the great state of Iowa; he has almost made a good Grange speech, and he has pointed out the absolute necessity of something being done to right the wrongs of which he has spoken. The way we have been righting wrongs in the east, has been through organization, through organized effort.

You are here representing a great industry; you are doing a great good among your people; you are here for the purpose of protecting, as it were, your interests. You are an organization, local in character, and you have done a great work; but suppose you had been an organization national in character, such as has been referred to by the gentleman who preceded me, as the Grange movement 25 or 30 years ago, in your state. I want to say to you, while the Grange movement might be presumed to be a dead letter to-day, for your own information, I want to say, that the Grange movement is more alive to-day than it was ever in its history—they have produced results, accomplished things, in the past ten or fifteen years that would have been impossible to accomplish without this great organization.

I come to you, gentlemen, not as one who has been educated in college, or prepared for any special line of work; I come to you as a farmer of the state of New Jersey, who lives on and operates his own farm. I come here as one who has had some little experience in organizing the farmers of New Jersey, and in the state of Iowa, where I have spent some time in the past year.

It was a great pleasure to me to talk to the farmers of your state, and the satisfaction of it all was, that I did not find a farmer but who agreed with me. It is true that some of them could still see the Grange skeleton; their mistakes were fesh in the memory of those who could recall some of those mistakes. I want to say to you, the Grange of to-day is a conservative force. We are working carefully to uplift the American farmer, whether in Iowa or the eastern states. We are not antagonistic to any other industry; we are at work, fighting for a square deal; we are working for the alleviation of the American farmer; and the past few years have demonstrated that we had to have some organization in order to control some of the conditions existing with which we are confronted. We have been enabled in the state of New Jersey to do things no one realized it was possible to do, in the way of securing legislation which has been a great advantage to the farmers of our state. Pardon me if I shall for the moment illustrate one practical demonstration in our state. In 1896 the electric railways of our state were beginning to prepare themselves to carry light freight and express packages. After some of them had got their equipments and received their cars, the legislature happened to be in session— and in the twinkle of an eye, there was a bill passed prohibiting electric railways from carrying freight. We were weak at that time in our state; we had less than 2,000 members in our organization. Two years ago, some of our members began to realize the fact that our rights had been taken away from us. We prepared a bill through the organization repealing the act of 1896 and giving us what rightfully belonged to us. Some of my friends said: "What is the matter with you; do you have any idea you can get that measure passed through this legislature, that has been practically elected and controlled by the railroads of the state?" I said: "It won't do any harm to try; it is only asking for something along the line of fairness and justice and equity of what the people demand, whether farmer or business man; it is for the greatest good to the greatest number." We prepared our bill and had it introduced in the senate. It was referred to the committee on railroads and canals—a pretty tough proposition. We had a hearing—had sent word to some of the subordinate granges to be there—it was impossible for me to be there at the time. The railway people were there and they defeated them. They telephoned me, and I sent word back to stick to it and have another hearing, and for two of our members to go to Atlantic City, the home of the chairman of that committee, and tell him that there is an organization back of this movement, and asked one of them to come and see me. The result of this movement was, that the gentleman got busy, taking notice of his constituents. We prepared telegrams and sent them to the hundred subordinate lodges, and we prepared a letter to follow the telegrams, that there was to be a hearing, and by twelve o'clock we had over two hundred farmers, their wives and boys present at the state house—we had become organized; we had a set of resolutions passed by the various agricultural societies, whose executive committees had called them in special session, and all these resolutions were in line with the bill which was prepared. At three o'clock we marched 200 strong into the senate chamber. You should have seen the members of the legislature of the state of New Jersey sitting up and taking notice. "What is the trouble with these rubes; what are they doing here—they were there making a strenuous effort to secure the passage of the Trolley Freight Bill. The result was, when we entered the senate chamber, we filled it. Our representatives had a list of names of those who were to speak for the bill. It was my privilege to be the first one to speak, and others followed me. Then after a while, one of the honorable gentlemen said, that he thought the railroads should have a chance to have a hearing, and they finally called out the name of Judge Collins, and the arguments were carried on for some time. Finally the gentleman, who had told me the week before that the bill would go to sleep at his desk, told me that it looked to him as though there had been some effort put forth and that the result of the hearing would be that it would be reported favorably. The result was the bill was passed in the senate and also in the house.

If I had time I could go into detail about the various measures before congress, Grange measures. It was a Grange measure which first gave us the right for a department of agriculture, presided over by a Secretary of Agriculture. When this measure first went before congress it was laughed at. It was the Grange that secured the rural mail delivery. The Inter-state Commerce Commission is another creature of the Grange.

What are you going to do about these great problems confronting you? You want an organization of national character. Our interests are identical. The Grange is working along the lines to uplift the American farmer; it has been working for the parcels post, postal savings banks, improvements of public highways, and a number of other measures have been taken up and looked after by the legislative committee of the Grange. There is no important matter before congress but what they consult with the national committee of the Grange, realizing, as they do, they are the only organization that has stood the test of time.

I want to say to you, for your own benefit, that at the present time this great national organization has a membership of approximately one million people, scattered over thirty states of the Union. You should have seen the demonstration in the city of Hartford, where over thirty thousand were present. I should have been glad to have welcomed you to my own state, in Atlantic City, where nearly one thousand members gathered in annual session, and the various questions discussed here were taken up. We are laying our plans, whereby we may create an increased growing sentiment among our people. We are endeavoring to wake up the farmers to a realization of the importance of their interests, so that they can be everlastingly at it 365 days in the year, as we are working.

In the little state of New Jersey we have 119 subordinate Granges. If the state of Iowa was as well organized as we are accordingly, you could take up any question, as if one man, and you could accomplish things. This is why the National Grange has made such a record in the past few years. They have received recognition and responded in the various conferences and congresses during the past years. These are only a few illustrations of what may be done by organization. Our whole purpose is continual work along conservative lines, building up and creating public sentiment, crystallizing it so that it will become fixed and that it may demonstrate the power there is in organization along conservative lines.

I agree with my friend who said that it is our fault as farmers—we growl about this being done and that not done—what have we done to help the matter? Some one may have written a postal card to their representative in congress or state legislature.

My fellow farmers, the work we are doing is to build up American agriculture, not at the expense of any other industry; we want all other industries to prosper, but simply want to have a share in this prosperity.

It is not our intention to have this movement slumber in the great state of Iowa; it is our intention and policy to spend our efforts, time and money in this state, and see if the greatest agricultural state in the Union can be organized.

(Adjournment.)

Lunch Time in the Grove at the Iowa State Fair and Exposition, 1907.

PART IV

PROCEEDINGS

STATE AGRICULTURAL CONVENTION.

December 11, 1907.

The State Agricultural Convention convened in the rooms of the Department of Agriculture at 9:30 o'clock Wednesday morning, December 11th, with President Cameron in the chair.

The meeting was called to order and the president appointed the following committees:

Committee on Credentials: L. H. Pickard of Shelby county, E. J. Curtin of Winneshiek county and T. W. Purcell of Franklin county.

Committee on Resolutions: C. W. Hoffman of Decatur county, H. S. Martin of Hardin county and A. L. Denio of Buena Vista county.

Vice-President Brown was called to the chair and the president made the following address:

PRESIDENT'S ADDRESS.

C. E. CAMERON, ALTA, IA.

We are again assembled in annual convention in the interests of the Department of Agriculture of Iowa. It becomes our business at this meeting to review the work of the last year and to prepare for the work for the year to come. In reviewing the work of the last year I will leave that largely with our able and efficient secretary, Mr. Simpson, as he has the data of all the business for the year in his report.

I can but feel proud as a member of the directory of the Department of Agriculture for the great fair of 1907. The Iowa State Fair is the greatest agricultural fair held in the world, speaking from a strictly agricultural standpoint. There are fairs that have larger gate receipt; there are fairs that have larger gross receipts, but in exhibits that come directly from the farm, Iowa is in a class by herself; and of all the fairs I have visited there is none where the people are more interested in the products of the farm than the people of Iowa.

I wish to mention a few of the entries in the different departments of the fair for 1907: Horses 1,132, cattle 1,146, sheep 586, hogs 2,264. The increase in all departments this year was about twenty per cent over any year in the past, but in our gross receipts of the fair of 1907 we fell short about $6,000 of the banner year of 1906. We think we can account for that—the weather man did not treat us just right, as we had three rainy days, and the new adjustment in passenger rates of an advance of one cent per mile for the round trip I am satisfied cut the Iowa State Fair fifteen to twenty per cent of the gross receipts. The people of Iowa are proud of their state fair and they are loyal to it by their attendance. I am glad to see the friendly feeling that has been manifested toward it by the members of the legislature in the last few years. I know they feel a sense of pride when they visit the fair and see the magnificent equipment they have provided for showing to the world what Iowa can produce, and I hope they will continue this good work until our equipment is equal to our exhibits. New improvements have been built on the grounds the last year as follows: Swine pavilion, horse barn, water works and electric light plant.

There are several needed improvements that I could recommend for the coming year, but as our means are limited I will not take the time to enumerate them, as they are beyond our reach this year. But there is one important improvement that I would recommend, and that is the building of an administration building for the convenience of all the exhibitors. We have our new and up-to-date horse barns, cattle barns and swine pavilion, but no place for the convenience of the public and the exhibitors. If we had an administration building, standing where the secretary and treasurer's office now stands, large enough to accommodate all the superintendents of the different departments, people who have business with the various departments would find them all in one building. As the offices now are, located all over the grounds, exhibiors do not become acquainted, as they do not come in contact with each other, but with this new building it would be the Mecca of the fair.

There is one thing which I wish to congratulate the people of Des Moines, especially the Commercial Club and the Greater Des Moines Committee, for their interest in the fair the last year and taking care of the outside people who visited the fair by appointing committees to see that they had a place to stay and giving any information they desired.

The stand the fair has taken the last few years in keeping out objectionable shows and other undesirable features has had the approval of the press and the people generally. It has been the object of the fair management to bring the standard higher, and I am satisfied they have accomplished a great work in this line, as the reputation of the Iowa State Fair stands today at the top for clean fairs. We must provide amusement features for the fair, for it takes all classes of people to make a fair. We do not aim to provide any amusement feature to take away any interest from the exhibits. We have no amusement program in the mornings, which gives the people a chance to visit all the departments of the fair and by 1:30 in the afternoon they are tired and want a rest, and it has become second nature to wend their way to the grand stand to rest and be amused for the afternoon, and I am sure they feel better than if they tramped all day around the grounds and at night feel so tired they want to go home. But unfortunately we have not grand stand room to accommodate more than fifty per cent of the people who want to take this rest and enjoyment, and I hope some day to see a grand stand that will be in keeping with the fair and the demands of the people.

THE PRESIDENT: We will now listen to the report of the secretary, Mr. Simpson.

MR. SIMPSON: I desire to say a few words with reference to an article published in a certain newspaper of the state (it is not necessary to give the name, as no one but its editor takes it seriously) during the past summer. In the article the editor seemed to take delight in abusing members of the board, and calling on them for financial report, which he stated had never been made. In making such a statement he displayed his ignorance, or for reasons, known only to himself, maliciously desired to misrepresent the department. If he was at all conversant with the facts, he would have known that at each annual meeting a statement of the receipts and disbursements for the previous year has always been made by the secretary to the convention. This statement is published in the annual Iowa Year Book of Agriculture, the official publication of the department. He would also know that the law provides for a finance committee, appointed by the state Executive Council, to make a yearly examination of the Department of Agriculture, previous to each annual meeting. This statement is published in the proceedings of the Executive Council. He would also know that the State Executive Council has regularly in its employ an expert accountant whose duties are to annually examine the accounts of the various state departments. No further comment is necessary except to state that the Year Books are for free distribution, as well as the proceedings of the State Executive Council, and may be had for the asking.

SECRETARY'S REPORT.

I have the pleasure to present my annual report as secretary of the Iowa State Board of Agriculture to the State Agricultural convention.

The farmers of Iowa have much to be thankful for, notwithstanding the harvests have been less bountiful the past season than for 1906. While the yield of almost all farm corps was lessened by a most unfavorable crop season, first too dry and then too wet, this was overcome to a certain extent by increased prices. The currency flurry has had its effect on the live stock market, which will of necessity further reduce the price of all farm products; this condition, however, will improve within a short time. There is no real cause for worry or uneasiness on the part of the farmer, as he is better able to withstand the present situation than other business interests. The prices received at the farm sales the past two months and the strength of the country banks is evidence of the faith of the farmer in the future.

In this report we will touch only upon the affairs of the State Board of Agriculture, as managers of the State Fair and Exposition, its finances to the close of the fiscal year, November 30th, the county and district fairs and the farmers' institutes.

The Fifty-Third Annual Iowa State Fair and Exposition was successful in all departments. The number and educational value of exhibits was never before equalled, and showed a large increase over previous years. *Ninety of the ninety-nine counties in the state were represented by exhibits in the various departments, supplemented by exhibits from twenty different states, and one foreign country.* The exhibitors in the several departments number close to fifteen hundred, about three hundred being duplicates, or having exhibits in more than one department, thus reducing the actual number of individual exhibitors to a few less than twelve hundred. *Four thousand cash prizes, aggregating in round numbers $28,000.00 cash*, were awarded in the various departments other than for speed, giving an average of about $32.00 to each exhibitor. The individual amounts received by the various exhibitors varied from $1.00 to $750.00, the smaller amount being generally in the children's and the larger in the stock departments. To show the number of exhibitors and entries in the various departments the following table is given:

Department	Number of Exhibitors	Number of Entries
Horses	84	1,132
Cattle	97	1,146
Swine	267	2,264
Sheep	28	586
Poultry	86	1,378
Agriculture	108	1,021
Farm implements and machinery	299	....
Pantry and apiary	114	1,417
Dairy	112	112
Horticulture	29	489
Floriculture	22	281
Art, needle and childrens'	235	2,493
Total	1,481	12,319

You will notice that one-third of the entire number of exhibitors were in the stock departments, and *eighty per cent of the stock exhibitors were from Iowa.* A glance at the awards will show that the Iowa breeder received his full share of the prizes. This speaks well for the breeders of Iowa when you consider that only the stock from the herds of the more prominent breeders of other states will venture into the ring at the annual Iowa show.

Forty-two Short-Horn breeders from eight different states entered 305 animals. A few years ago this list in itself would have been considered an excellent show. The total number of individual cattle entered was 805, with 1,146 entries; horses, 472, with 1,132 entries; 3,000 hogs, and about 450 sheep, giving a grand total of over 4,700 animals listed for entry in the four live stock departments.

As live stock is one of the chief sources of wealth for the Iowa farmer, it is the hub around which our fair must be built to give it stability. The managing board of the fair has given due cognizance to this fact by so arranging the prize list that the best stock exhibit may be brought out. *About seventy per cent of all cash premiums is paid out in the four stock and the poultry departments, amounting the past season to over* $18,000.00. Nor must one lose sight of the farm implement exhibit. This year the show covered about *forty acres*, and was made by about three hundred exhibitors. Inquiry of the exhibitors in this department will convince you of the interest taken in their exhibits by the visitors.

Special effort has been made by the management to interest the boys and girls. For the past four years a scholarship of $200.00 cash has been given for a boys' judging contest at the fair. This was augmented this year by a second prize of $100.00 and a third of $75.00 cash premium; in addition, a cooking contest for girls was inaugurated with a scholarship of $100.00 for first prize, $50.00 for second and $25.00 for third. A lively interest was taken in both these contests; in the former, thirty-eight of Iowa's best boys took part, and in the latter, ten girls. Some half dozen students now at the State College at Ames have received assistance through their ability to win one of these coveted prizes in the past.

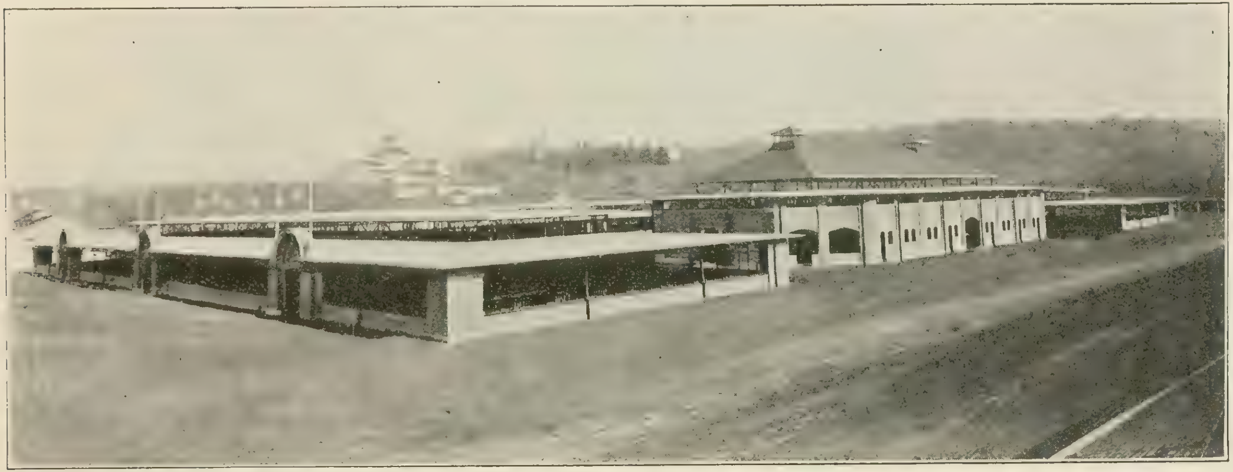
The amusements were of the same high standard that has characterized this department in the past.

The attendance shows a slight decrease from 1906—about nine per cent. This was nothing more and indeed much less than could be reasonably expected with a twenty-five per cent increase in railway rates and unfavorable weather during the week, there being rain on three of the five days. While the decrease in attendance was only about nine per cent, the loss on number of passengers brought in by the various railway companies was from twenty to thirty per cent (one road reported an increased traffic). This brings out very clearly one point, viz., that the visitor is slowly beginning to realize that it is an utter impossibility to cover the ground, to any degree of satisfaction, in one day, he therefore makes his plans to spend two or more days at the fair. This, and the fact that the city people are awakening to the fact that the Iowa State Fair and Exposition is more than a pumpkin show, accounts for the small percentage in decreased attendance as compared with the larger percentage of decrease of visitors brought in by the railroads. While the receipts from the ticket sales show a corresponding decrease, the receipts from other sources were slightly larger, leaving a net decrease of only about six per cent in the total receipts of the fair over 1906.

The attendance is naturally limited to Iowa, although one sees many visitors from other states who are attracted by the large and varied exhibit. *The state fair is recognized as an important educational force and is the most effective advertisng medium that the state possesses.* The fame of the annual stock show at the Iowa State Fair has gone broadcast throughout the United States and Canada. It is second only to the great international show held annually at Chicago, and as a breeders' show for the four classes of live stock, viz., horses, cattle, swine and sheep, has no equal.

The imperative need today in Iowa is for a thorough and concerted effort on the part of all for a greater knowledge in the methods of more intensive farming, followed with a well conducted and systematic campaign of advertising that will show and prove to the world the almost unlimited resources of our soil, not surpassed by any agricultural lands the world over. For many, many years all our lands have been utilized for farming purposes. This being true, there is no other alternative but for the coming young man or renter to seek new fields, as he has not been properly educated to the methods of more intensive farming. Prove to him that it is possible to produce on eighty acres what his father or grandfather produced on one hundred and sixty and see how quickly he will accept the opportunity to make his future home in Iowa. The average size of the Iowa farm at the last census was 156 acres; it should be less than this. Then again, with the smaller farm the great problem of help is practically solved. The trite saying, "all is not gold that glitters," can well be applied to much of the literature giving glowing accounts of the great possibilities for farming in the semi-arid regions. Thousands of dollars are expended annually in advertising cheaper lands to attract the young man from the Iowa farm. Let us do a little advertising at home, not especially to attract those from the east, west, north or south, but to demonstrate more emphatically to our own people that by the application of more scientific and intensive farming their condition will be bettered by remaining in Iowa. *The Iowa State Fair and Exposition is the best possible medium through which the resources and great possibilities of our state may be advertised, for it is here, as at no other place, one may see from year to year what improvement is actually taking place.*

The work of improving the fair grounds is constantly being carried on. During the last year some substantial improvements were made. Chief among these was the new hog barn and show pavilion, erected at a cost of $77,000.00. This building is well put up, being of brick and steel, with cement floor in all of the pens. Its construction is open, thus insuring the best light and ventilation. The extreme dimensions of the barn are 356x522 feet, built in the shape of the letter "E"; the show pavilion is 113x200 feet; this makes a combined area of over three acres under roof, two and one-half acres in the barn and one-half in the show building. There are 1,156 pens, each 6x7 in size. The maximum capacity of the barn is over 3,000 hogs, and at this there were many disappointments this year, by breeders not being able to secure pens and therefore unable to bring their show hogs. There is a tendency with some of the breeders to occupy too many pens with sale hogs. While



Swine Barn and Show Pavilion at the Iowa State Fair and Exposition grounds. Combined floor space under roof, three and one-half acres. Dimensions main part of barn proper, 356 x 522. Show Pavilion, 113 x 200. Capacity of barn, 3,000 hogs.

selling is one of the most potent factors in encouraging the breeder to bring his show stuff to the Iowa fair, the fundamental purpose of the institution is to stimulate pure breeding and to show its results; therefore, the more breeders we can have represented the more beneficial the show will be.

A system of water distribution was installed, connecting with the Des Moines water company's main at Thirtieth street. Six and eight inch mains were laid and twenty-four fire hydrants put in, which not only guarantees ample water supply for the future, but also affords splendid fire protection. About $11,600.00 was expended for this improvement. During the week of the fair the Des Moines fire department maintains a sub-station on the grounds.

An electric light and power plant was partially installed at an expense of $12,000.00. The necessity for maintaining a plant for this purpose arises by reason of the management having been unable to get the Edison Light company of this city to furnish the current for the necessary light and power.

First section of the proposed new Horse Barn at the Iows State Fair and Exposition grounds, erected 1907.

The first section of the proposed horse barn was erected at a cost of about $10,500.00. New walks, streets and other minor improvements were made, bringing the total amount expended for improvements the past season up to over $116,000.00; $41,000.00 of this amount being available from the state fair surplus, $75,000.00 appropriated by the last general assembly for the hog barn.

During the past six years the management has put on improvements to the amount of $140,000.00 out of the receipts of the fair. The surplus, if any, is always used for bettering the exposition grounds. This money has been judiciously expended, and where most needed. The people of Iowa, especially those who attend the fair, may feel sure that all the money they expend for tickets will be used; that not needed for current expenses and premiums, in building up the institutions and adding to its permanence and utility. Three hundred thousand dollars in round numbers, has been used in bettering the facilities and grounds the last six years.

The finances of the department are in excellent condition, as the report of the finance committee appointed by the executive council, will show. There is now in the treasury substantially $35,000.00—$15,000.00 in the reserve fund and $20,000.00 in the working fund. The total receipts from all sources at this year's fair was $104,356.75, being about six per cent less than the receipts for 1906 ($6,000.00 in actual figures).

To show the constant and rapid growth of the institution, the receipts, cash premiums paid, improvements made, and the condition of the treasury at the close of each fiscal year is given for the past six years:

Year	Receipts	Cash premiums paid	Improvements By appropriations	 By fair receipts	Total	Balance at close of year
1902	$ 63,084	$21,736	$ 37,000	$ 25,936	$ 62,936	$30,372
1903*	59,838	23,813	....	17,855	17,855	28,963
1904	66,138	24,691	47,000	12,640	59,640	29,657
1905	84,121	28,730	....	11,963	11,963	39,976
1906	110,929	31,703	....	30,035	30,035	50,294
1907*	104,356	35,504	75,000	41,391	116,391	35,327
Total	....	....	$159,000	$139,820	$298,820	....

*Rainy week.

It will be seen that the management has kept well within its resources in the expenditure of funds. In fact each year, at the first board meeting, a reserve fund of $15,000.00 is set aside for the next season to guard against any deficit and to guarantee the payment of premiums. We would also call your attention to the increased amount paid out in premiums each year. The aggregate increase paid for this purpose in the past four years has been about $48,000.00. This is in accord with the policy of the board—to increase the amount of cash premiums by a more extensive classification of the prize lists as the revenue from our fair receipts grows, keeping in mind that the Iowa State Fair and Exposition is not maintained for any pecuniary profit but for the practical information received through an inspection of the exhibits.

A complete statement, giving in detail the receipts and expenditures of the department for the fiscal year ending November 30, 1907, will be appended and made a part of this report.

FARMERS' INSTITUTES.

There were two less institutes reporting and receiving the state aid for the fiscal year ending June 30, 1907, than for the preceding year. Seventy-eight of the ninety-nine counties reported as having held institutes, and received the state aid through the state auditor's office to the amount of $5,566.50. Agricultural and domestic short courses were held in two or three counties, which are not recognized by the state auditor as regular institutes under the Iowa statute. Through the co-operation of the extension department of the State College at Ames several additional counties will hold short courses the coming winter. Through this department of the college a great deal of assistance has been rendered the county farmers' institutes of Iowa. To encourage a better corn exhibit at the farmers' institutes the fair management included a class in last year's prize list for county exhibits of corn made in the name of the county by the farmers' institute. The prize was a cash offering of $200.00, divided into five premiums—one hundred, fifty, twenty-five, fifteen and ten dollars. These prizes were paid to the officers of the institutes winning, and are to be used in cash offerings on corn at their next institute meeting. The Polk county institute was first in this class, Dallas county second, Story county third, Mahaska county fourth and Warren county fifth.

COUNTY AND DISTRICT FAIRS FOR 1907.

Eighty-nine county and district societies reported holding fairs the past year and received the state aid to the amount of $16,932.00. This is an increase of five over the number reporting in 1906. The comparative financial statement will show a slight increase of average receipts, balance on hand at the close of the year, and value of property. On the other hand, it will also show a slight decrease in the average amount paid out for premiums and present indebtedness. The total amount paid out for premiums this year for eighty-six of the eighty-nine fairs reporting (three statements not being available at the time this report was prepared) was $57,567.00, as against $59,961.00 in 1906 for the eighty-four societies reporting. The total value of fair ground property is listed at $514,496.00, as against $496,702.00 for 1906; and a total indebtedness of $100,007.00 as against $103,507.00. The average value of property is given at $5,982.00, as against $5,913.00 for 1906. The average indebtedness is $1,163.00 and for 1906, $1,232.00. The following eight fairs paid out over one thousand dollars each in premiums:

1. Union district, Muscatine county	$1,515.00
2. Marshall county	1,416.00
3. Clinton district, Clinton county	1,239.00
4. Clinton county	1,122.00
5. Cass county	1,037.00
6. Henry county	1,013.00
7. Kossuth county	1,011.00
8. Columbus Junction district, Louisa county	1,006.00

STATEMENT OF ACCOUNT.

RECEIPTS AND DISBURSEMENTS FOR THE FISCAL YEAR ENDING NOV. 30, 1907.

RECEIPTS.

Cash balance on hand Dec. 1, 1906		$ 50,294.87
From collections by superintendent of fair grounds	$ 2,227.68	
From state appropriation for swine barn	75,000.00	
From state appropriation for insurance	1,000.00	
From fees, division of horse breeding	2,092.50	
From interest	1,132.16	$ 81,452.34
By receipts from 1907 State Fair exposition—		
From rental of space, Exposition building	$ 2,107.50	
From rental of space, Machinery Department	1,184.50	
From rental of space, Dairy Department	693.37	
From rental of space, Agricultural Department	263.28	
From rental of stalls, Horse Department	616.00	
From rental of stalls, Cattle Department	987.00	
From rental of pens, Swine Department	1,175.00	
From rental of pens and coops, Sheep and Poultry Departments	302.10	
From rental of light and power	321.00	
From sale of concessions	13,973.75	
From advertising in premium list	431.00	
From forage	3,548.05	
From entry fees, speed department	4,350.80	
From exhibitors' tickets	2,340.00	
From Am. Short-Horn Ass'n special premiums	750.00	
From Am. Hereford Ass'n special premiums	479.61	
From sale of tickets	70,544.90	
From miscellaneous sources, by secretary	288.89	$104,356.75
Total receipts		$236,103.96

DISBURSEMENTS.

To expense warrants paid—		
Issue of 1906 and former years	$ 79.68	
Issue of 1907	165,142.09	$165,221.77
To premium warrants paid—		
Issue of 1906 and former years	$ 152.50	
Issue of 1907	35,401.79	35,554.29
Total cash balance in treasury, Nov. 30, 1907		35,327.90
Total disbursements		$236,103.96

SUMMARY.

To cash balance Nov. 30, 1907			$ 35,327.90
Unpaid expense warrants:			
Issue of 1906 and former years	$ 35.00		
Issue of 1907	7.19	$ 42.19	
Unpaid premium warrants:			
Issue of 1906 and former years	$ 31.00		
Issue of 1907	103.00	$ 134.00	
Total unpaid warrants			176.19
To credit profit and loss			$ 35,151.71

SUMMARY—RECEIPTS AND DISBURSEMENTS OF IOWA STATE FAIR, OF 1907.

To total receipts		$104,356.75
To total disbursements account—		
1907 fair	$79,151.99	
To net profit, 1907 fair	25,204.76	$104,356.75

STATEMENT OF EXPENSE AND PREMIUM WARRANTS ISSUED DURING THE FISCAL YEAR, DEC. 1, 1906, TO NOV. 30, 1907.

Improvements and repairs—			
Swine barn		$77,166.86	
Water distribution system		11,599.96	
Electric light and power plant		11,922.45	
First section of horse barn		10,327.73	
Fencing		324.37	
Streets		712.01	
Walks		718.14	
Removing old swine barns		529.22	
Miscellaneous improvements—			
Painting	$201.81		
Turn stiles	299.94		
Sewer	219.26		
Closets	113.65		
Entrances	106.90		
Salary assistant foreman of improvements	154.12		
Furniture	58.41		
Map of grounds	37.41		
Judges' stand	54.00		
Lumber	553.77		
Hardware	377.99		
Other building material	150.10		
Pay roll, emergency horse barns	447.32		
Miscellaneous improvements and material	453.63	$ 3,158.31	$116,459.05

Expenses other than for improvements of fair of 1907—		
Insurance	$ 1,653.41	
Fair ground maintenance	1,735.03	
Expenses of committee on investigation of feeds, seeds, etc.	420.92	
1906 bills paid in 1907	258.33	
Expense of winter meeting	527.68	
Clerk hire	300.00	
Miscellaneous office expense	147.66	5,043.03
Expenses of 1907 fair—		
Postage	548.00	
Advertising	4,769.85	
Meetings of executive committee	748.90	
Meetings of special committee	785.56	
Expenses telegraph and telephone	331.98	
Printing	1,621.90	
Attractions	12,035.15	
Board meeting	298.20	
Clerk hire	2,016.15	
Expenses privilege department	525.03	
Expenses forage department	3,310.16	
Expenses light department	606.88	
Expenses president's department	90.00	
Expenses ticket department	321.50	
Expenses police department	1,430.00	
Expenses treasurer's department	1,001.60	
Expenses gate department	1,598.50	
Expenses speed department	427.10	
Expenses horse department	711.25	
Expenses cattle department	701.00	
Expenses swine department	600.45	
Expenses sheep and poultry department	342.20	
Expenses machinery department	354.45	
Expenses agricultural department	549.75	
Expenses dairy department	260.45	
Expenses horticultural department	128.50	
Expenses floricultural department	72.50	
Expenses art and needle department	563.80	
Expenses judging contest	95.20	
Expenses rest cottage	50.45	
Expenses auditing committee	61.80	

Miscellaneous expenses—			
Flower beds	$353.41		
Track work	241.25		
Stationery and other office supplies	111.02		
Transportation	125.00		
Scavenger work	197.70		
Expenses special exhibits	137.70		
Decorations	430.70		
Water rental	122.86		
Rental of tents	312.05		
Ribbons and badges	480.44		
Merchandise	461.18		
Admissions refunded	29.25		
Sup't of grounds pay roll for labor, team work, etc	3,686.38	$ 6,688.94	
		$43,647.20	
Premium awards, 1907—			
On horses	$4,567.00		
On cattle	8,359.00		
On swine	2,565.00		
On sheep	1,892.00		
On poultry	883.00		
On agricultural products	2,745.50		
On pantry products	711.00		
On dairy products	615.99		
On horticultural products	945.50		
On floricultural products	881.80		
On art and needle work	1,782.00		
On scolarships	500.00		
On winter corn premiums	332.00		
On speed	8,725.00	$35,504.79	$ 79,151.99
Total			$200,654.07

Respectfully submitted,

J. C. SIMPSON, Secretary.
Iowa Department of Agriculture.

THE PRESIDENT: Next in order is the report of the Treasurer.

To the Board of Directors of the Iowa State Board of Agriculture:

REPORT OF TREASURER.

Gentlemen:—Herewith please find report of your treasurer for the year 1907:

Receipts	
Cash on hand	$ 50,294.87
Gate receipts	55,010.25
Amphitheater receipts	5,144.75
Bleachers receipts	526.65
Quarterstretch receipts	913.50
Evening receipts	952.25
Evening amphitheater receipts	4,961.75
Reserved seat receipts	1,631.75
Campers' tickets	1,404.00
Superintendent of privileges	13,973.75
Superintendent of agriculture	263.28
Superintendent of swine	1,173.00
Superintendent of sheep and poultry	302.10
Superintendent of horses	616.00
Superintendent of fine arts	2,107.50
Superintendent of dairy	693.37
Superintendent of grounds	2,227.68
Superintendent of electric light	321.00
Superintendent of cattle	989.00
Superintendent of machinery	1,184.50
Secretary	91,413.01
Total	$236,103.96
Balance on hand December 1, 1907	35,327.90

Disbursements	
Expense warrants	$165,221.77
Premium warrants	35,554.29
Balance	35,327.90
Total	$236,103.96

Respectfully submitted,
G. D. ELLYSON,
Treasurer.

This is to certify that G. D. Ellyson had on deposit as treasurer of the State Board of Agriculture at the close of business December 1st, 1907, $15,000.00 in a savings account and $20,327.90 on open account, making a total of thirty-five thousand, three hundred and twenty-seven dollars and ninety cents ($35,327.90).

D. F. WITTER, Vice President.

REPORT OF AUDITING COMMITTEE OF THE DEPARTMENT OF AGRICULTURE FOR THE YEAR 1907.

Des Moines, Iowa, December 11, 1907.

To His Excellency, Hon. Albert B. Cummins, Governor:

In compliance with the instructions of the executive council we, as a committee, duly appointed to examine the books of the Department of Agriculture, for the year 1907, as provided by Section 1657-Q, supplement to the Code of 1897, beg leave to report that we have examined the accounts of the sources from which money received came into its treasury, and the vouchers and warrants of its expenditures, a detailed account of same being attached and made a part of this report. Your committee find that no warrants have been drawn except on duly authenticated vouchers, which are on file, duly numbered with warrant number. We also commend the secretary of this department for the efficiency of the system of bookkeeping in vogue in his office, and the accuracy of his accounts with the treasurer of said department.

A. H. GRISSELL,
C. W. HOFFMAN,
J. C. FLENNIKEN,
Committee.

A parade of Prize Winning Horses. A daily feature at the Iowa State Fair and Exposition of 1907.

Statistical Information With Reference to Improvements at the State Fair and Exposition Park Together With a Comparative Financial Statement For Several Years.

MONEY EXPENDED FOR IMPROVEMENTS UPON THE STATE FAIR GROUNDS IN THE PAST EIGHT YEARS.

From special appropriations by the legislature:		
In the year 1902, for stock pavillion	$ 37,000.00	
In the year 1904, for agricultural building	47,000.00	
In the year 1907, for swine barn	75,000.00	
Total	$159,000.00—	$159,000.00
From receipts of the state fair:		
In the year 1900	$ 8,115.59	
In the year 1901	13,378.73	
In the year 1902	26,457.12	
In the year 1903	17,855.77	
In the year 1904	12,641.11	
In the year 1905	11,963.09	
In the year 1906	30,035.33	
In the year 1907	41,459.05	
Total	$161,935.79—	$161,935.79
Total amount expended for improvements in eight years.		$320,935.79
Reserve or emergency fund created within the past six years	15,000.00—	15,000.00
Total	$176,935.79—	$335,939.79

STATEMENT OF AMOUNTS PAID FOR PREMIUMS IN 1907, 1906, 1905, 1901 AND 1896

On What Account	1907	1906	1905	1901	1896
Horses	$ 4,567.00	$ 3,672.00	$ 2,941.00	$ 1,548.90	$ 1,133.10
Cattle	8,359.00	8,133.00	7,274.00	4,786.80	2,285.10
Swine	2,565.00	2,525.00	2,179.00	1,133.10	952.20
Poultry	883.00	904.00	731.50	569.25	917.55
Sheep	1,892.00	1,456.00	1,496.00	867.60	
All other premiums	8,523.79	7,801.44	6,790.39	5,548.19	5,533.91
Speed	8,725.00	7,212.50	7,145.00	4,750.00	5,372.93
Totals	$35,504.79	$31,703.94	$28,556.89	$19,203.84	$16,194.79

Increase in 1907 over 1906	$ 3,800.78—	12½ per cent
Increase in 1907 over 1905	6,949.83—	24 per cent
Increase in 1907 over 1901	16,300.88—	85 per cent
Increase in 1907 over 1896	19,309.73—	120 per cent

CONDENSED FINANCIAL STATEMENT OF THE IOWA STATE DEPARTMENT

Showing Receipts and Disbursements of Iowa State Fair and Other Sources and

Profit of Fair for Each

Year	Receipts						
	Cash balance beginning of year	In reserve fund	From state fair	From state appropriation	From other sources	Total receipts for year	Grand total
	$ 116.79	....	$ 36,622.10	$ 7,000.00	$ 6,710.22	$ 50,332.32	$ 50,449.11
	28,616.55	....	50,712.91	1,000.00	2,753.82	54,466.73	83,083.28
	34,244.93	$12,000.00	63,084.71	38,000.00	3,037.06	104,121.77	138,366.70
	30,372.25	15,000.00	59,838.56	1,000.00	3,140.79	63,979.35	94,351.60
	28,963.11	15,000.00	66,100.36	48,000.00	2,622.03	116,722.39	145,685.50
	29,657.23	15,000.00	84,786.25	1,000.00	2,840.92	88,627.17	118,284.40
	39,976.34	15,000.00	110,929.85	1,000.00	3,717.16	115,647.01	155,623.35
	50,294.87	15,000.00	104,356.75	76,000.00	5,452.34	185,809.09	236,103.96
Totals..	....	....	$ 539,809.39	$ 173,000.00	$ 23,564.12	$ 729,373.51	....

AGRICULTURE FOR YEARS OF 1896, 1901, 1902, 1903, 1904, 1905 AND 1906.

enditures, Together With Amount Expended for Improvements, Repairs, etc., and Net.
he Years Named.

Disbursements								Profits of Fair		
Premiums paid	Other fair expenses	Improvements and repairs	Disbursements other than for fair	Total for year	Cash on hand	Previous year's business or outstand'g warrants	Grand total	Total receipts of fair	Total expenses of fair	Net profit
,404.29	$ 15,351.06	$ 7,471.95	$*14,019.88	$ 53,247.28	$ 152.84	....	$ 53,400.12	$ 36,622.10	$ 31,807.35	$ 4,81
,203.83	13,925.87	13,378.73	2,313.44	48,821.87	34,244.93	$ 16.48	83,083.28	50,712.91	33,129.70	17,58
,736.31	20,073.34	63,457.12	2,608.69	107,875.46	30,372.25	118.99	138,366.70	63,084.71	41,809.65	21,27
,813.13	21,989.56	17,855.77	1,704.83	65,363.29	28,963.11	25.20	94,351.60	59,838.56	45,802.69	14,03
,691.68	28,485.42	59,641.11	3,195.43	116,013.64	29,657.23	14.63	145,685.50	66,100.36	53,177.10	12,82
,730.89	34,408.62	11,963.09	3,345.27	78,447.87	39,976.34	139.81	118,284.40	84,786.25	63,139.51	21,64
,703.94	40,315.60	30,035.33	3,385.87	105,440.74	50,294.87	112.26	155,623.35	110,929.85	72,459.39	38,47
,504.79	43,647.20	116,459.05	5,043.03	200,654.07	35,327.90	176.19	236,103.96	104,356.75	79,151.99	25,20
,384.57	$202,845.61	$312,790.20	$ 21,546.56	$722,616.94	....	....	....	....	....	......

*Overdraft of 1895 for $2,798.17.

THE PRESIDENT: Gentlemen, it affords me great pleasure to present to you this morning for an address upon ''The State Fair: Its Economic and Educational Value,'' a gentleman who has been connected with the State Fair of Minnesota for the last fifteen years, and for the last twelve years has been its secretary, and now is dean of the Minnesota College of Agriculture, and I feel he comes to you with experience on this subject. I present to you Mr. E. W. Randall, of Minneapolis, Minnesota.

MR. RANDALL: While listening to the reports of your treasurer and secretary this morning I was reminded of a family I once knew that lived out in Stevens county, Minnesota, one of the prairie counties of that state. This was a number of years ago, before our worthy president or anyone else found it necessary to caution us against race suicide. In this particular family there were fourteen children. One of the little girls, while visiting at the house of a neighbor, was asked how many brothers and sisters she had. She answered, ''I don't know; I have not been home since day before yesterday.'' It occurred to me that it would be unsafe for the visitor to attempt to tell anything about the growth of your State Fair. It is interesting of course to remember, as your treasurer just reminded you, that but a few years ago you had a deficiency to contend with; that such a condition has been eliminated and you now have a surplus; that there seems to be money in the treasury. It is gratifying also that this growth has been gradual, and therefore is substantial—a kind of growth that will continue and which will lead you to expect the same rate of increase in the future.

With your permission, I will use manuscript this morning, and in doing that I hope to fare better than the clergyman I once heard of. It seems that two Presbyterian ministers exchanged pulpits. One of the ministers was very anxious to know whether he pleased the brother's congregation, and after the sermon he asked one of the elders how he liked the sermon. The elder was rather silent, but finally admitted that there were three things about the sermon which he did not like. The minister, of course, was somewhat perplexed, but finally asked what the objections were. The elder says, ''You read it.'' The minister braced up a little and said he was sorry that was an objection, but that it was his custom, his own people were used to it, and he hoped they would overlook that part of it, and asked what further objection he had to the sermon. The elder says, ''You didn't read it well.'' Of course the minister was a good deal disappointed, but finally mustered up courage for the third objection, when the elder said, ''It wasn't worth the readin'.''

THE STATE FAIR—ITS ECONOMIC AND EDUCATIONAL VALUE

E. W. RANDALL, DEAN MINNESOTA COLLEGE OF AGRICULTURE.

The State fair is constantly growing in usefulness and popularity. Most of the states of the Union have a fair and a number of those states not supplied are planning to organize, locate and promote such a fair in the near future. In some of the states the organization and care of the fair is left largely to private initiative but usually the enterprise is of a public character and is promoted, financed, officered and managed under state direction. Usually sites are well chosen, with reference to centers of population and transportation facilities, improvements are carefully made and the management is good. The fairs as a rule are succeeding. The reports of the state fairs for the last dozen years will show an almost unbroken record of growth and success. The largest and most useful fairs of today will be found in the states of Iowa, Minnesota, Illinois, Ohio, Wisconsin, Indiana and Texas.

The well managed state fair places mile-posts along the pathway of progress and is valuable to the historian. Get a bird's-eye view of the grounds and exhibits of any state fair of fifty years ago. You will find eight-horsepower threshing machines, small plows and crude corn, hay and other kinds of farm machinery. Compare this with a view of the exhibits at any of the state fairs of today and you will have at a glance a better idea than many printed pages will be able to give. Fairs measure and mark eras of development.

The state fair provides object lessons upon the resources of the state in which it is held. No one can visit your own state fair without learning of Iowa's magnificent agricultural and live stock possibilities, her coal, her manufactures, her commerce and her transportation facilities. Your fair is a success in portraying the resources of your state. In like manner any other state fair, if successful, will portray the resources of the people who have promoted it.

The ingenuity, enterprise and energy of people is indicated in a state fair. Decadent, non-progressive communities, states or nations do not organize or hold fairs or expositions. Those lethargic people who are satisfied with mere existence and content with whatever is, have no heed of exhibitions, but where there is industry, intelligence, a spirit of progress and abounding life and energy, fairs will continue to grow in numbers and usefulness. The holding of a good fair in any state means that there are resources worthy of general attention and a people who know how to improve and utilize them.

Fairs have educational value. It is conceded that a man, woman or child will learn more of practical and lasting value at a fair in a day than can possibly be learned elsewhere in the same length of time. A fair with an attendance of 200,000 in a week gives more days of instruction than a school with an average attendance of 1,000 per day running nine months of the year. Compare the cost of maintaining such a school with the amount usually expended by a state for its fair, and the fair becomes a paragon of cheapness as well as utility. The state receives no better returns for any of the money spent for education than for that invested in the fairs. But few people realize the high relative position which a properly conducted fair should occupy among educational institutions.

State fairs provide holidays for the people. State fair week should be known as the holiday week of the year. There is a beneficial mingling of the people. Prejudices between city and country disappear and a feeling of mutual interest and respect takes their place. Acquaintance is greatly extended. All classes of people need respite from labor. Fairs are particularly beneficial to country people in this respect for their opportunities for recreation are not numerous. Since the days of free rural delivery and telephones farm homes are not isolated as they once were, but the need of such an outing as a fair affords will always exist and can hardly be overestimated. An institution which causes a considerable proportion of the people of the state to take a holiday once a year and spend a few days enjoyably, in study, in observing and touching elbows with their fellows and in wholesome recreation is worth while for this reason alone.

State fairs stimulate and encourage all lines of production. Well managed fairs reach and benefit all avenues of industrial life. There is no home, farm, factory or commercial enterprise that is not benefited, directly or indirectly. No farmer can examine the agricultural, horticultural, dairy and other products without feeling an impulse to make the results of his own labor equal as far as possible to that which he is inspecting. It is not too much to claim that farm methods are better and that crops of grain, corn, vegetables, fruits, etc., are increased from year to year because of the comprehensive exhibits made annually at the fairs are broadened in their scope and others become fittingly repre- and study the best types of all the breeds of horses, cattle, sheep and swine as shown at the fairs and again look with complete complacency upon a lot of scrub stock at home. Initial steps toward improvement are sure to be taken and the aggregate influence of the fairs in the upbuilding of the live stock of the country is beyond computation. As fairs are are broadened in their scope and others become fittingly represented in the exhibits, there are the same benefits for the miner, inventor, manufacturer or other producer as for the farmer or stockman. In stimulating industry, fairs are exerting an ever widening influence.

State fairs broaden and improve markets. The general exhibition of any article of merit increases popular knowledge and demand for it and enhances price accordingly. A few years ago butter frequently sold for six to ten cents per pound. Not half as much butter was made then as now. Today creameries and good home dairies can hardly keep up with their orders and good prices are the rule. Production and price have both doubled. Improved quality is the prime reason for this wonderful change, but the steady exhibition at the fairs of the best butter made with the machinery used in making it has been a positive influence, not only in inducing everybody to make good butter, but in calling general attention to the improved article and in creating a larger demand for it and at a much higher price. Let any new and useful article appear among the exhibits at a large fair and almost immediately there is a demand for it that will tax the capacity of its manufacturers. In no way can producers improve their markets with so little expenditure of time and money as in making suitable exhibits at state fairs.

State and other fairs are of large incidental value to the cities in which they are held. The advantage in having a city overflowing with visitors during the week of a fair is large. Hotels and restaurants are taxed to their capacity and merchants are busy caring for the sudden influx of customers. These advantages, it should be remembered, are incidental and not primary and should be given but little attention in planning the work of a fair. They are constant, however, and are of sufficient importance to warrant calling upon the favored city for a larger need of support, in case of need, than should be expected from one more distant, realizing only a general benefit from the fair. These incidental advantages should never be permitted to loom large in the vision of fair managers or obscure the real purposes for which fairs should be held. Give the primary objects of a fair as much attention as possible; secondary ones will care for themselves.

There should be a worthy purpose in every fair. There must be a beneficial object in view. Those who undertake the management of a fair, without well defined ideas of the substantial value of such an institution, thinking only of adding another department to the political machinery of the state or the creation of places for impecunious politicians, will meet with speedy disappointment. Loftier aims than these must be the rule. State fair managers should have an abiding faith in the utility of their work; they should feel that each annual exhibition has practical educational value to every one of their thousands of visitors, and vigor and earnestness will then characterize their every action. There should be a purpose even in the amusements. The races should be so planned and conducted as to encourage the breeding of better and more useful horses, and the athletic features should be so arranged as to stimulate the physical development of the people in the same manner as did the Olympian games for the inhabitants of ancient Greece.

For a state fair there should be state management. Private enterprise is insufficient. Public spirited citizens will not make sacrifices of time and money, nor will newspapers lend their unstinted aid, if, after success is achieved, there are stockholders to be benefited by a division of profits. If, however, the grounds, buildings, equipment and moneys belong to the state; if the institution be conducted solely for the general good and not in any way for personal advancement, and if, when the fairs are run at a profit, it is known that surplus funds will be used for betterments or set aside for increased premiums and a general expansion of the various departments, the co-operation of press and people may be depended upon and permanent success may be expected.

The management must be characterized by intelligence, frankness and integrity. Men placed in charge must not only know the needs, purposes and objects of the institution placed under their care, but the people of the state, who own it and in whose interest it should be managed, must be taken into their confidence. Any concealment of any of the features of management will engender suspicion which in time will result in loss of interest and the ultimate failure of the fair. There must not be even a suggestion of anything covered up, for the slightest suspicion of any wrong doing will cause the institution to suffer.

Not only must the managers of a fair be competent and honest, but they must be industrious. Each member of the managing board should be in charge of a department, one in which he is interested and one for the management of which he should be held responsible. He should give personal attention to all the details of his department, and be willing to give the necessary time, thought and labor to make it successful. There are no places for drones. Those connected with fairs who are disposed to regard their duties and responsibilities lightly and whose principal efforts are expended in the distribution of passes among their acquaintances and finding jobs, or at least places on the pay roll for their friends, should be given other employment at the earliest possible opportunity. They may be royal good fellows, but they are worth nothing to a fair.

The exhibition should always be comprehensive. Those planning it should have the clearest possible conception of all the resources, industries, and products interested and each should be fully represented. Manufactures, transportation, commerce, art, science—all should have a place, and the products of the mines and forests should be included. Products of the field, garden, and orchard and dairy should be lavishly shown and live stock exhibits should be complete in all departments. The various departments should receive evenly balanced attention; a few of them should not have unusual effort put upon them to the neglect and detriment of the others. The various departments when combined in one grand exhibition should have such magnitude, variety and interest as to challenge the attention of visitors and prove an inspiration and education for all of them. Give little heed to the man who speaks or writes of the decadence of state fairs. There is as much interest in them as ever and their field of usefulness is in no way circumscribed. Make the institution worthy of the hearty co-operation, interest and support of the press and people and you will find it a more potent influence than ever in the advancement of material interests. Its utility is unquestioned. It presents an illumined record of development from year to year and portends what is to be. In this great nation are many great states—great in domain and accomplishment and possibly greater still in more abundant resources and future development. Fairs are heralds of these conditions. A comprehensive fair also interprets a state to each resident thereof, creating within him a keener appreciation of home and all that home implies and gives a new inspiration to the farmer, the merchant, the manufacturer and those in other walks of life, suggesting loftier achievements in education and in the evolution of industrial conditions. Every worthy enterprise is given a new impetus. The spirit of a fair is one of optimism, of hope, and of promise. It points ever forward.

THE PRESIDENT: "The State Fair and Exposition," by the Hon. John Cownie, will be the next address.

MR. COWNIE: As you are no doubt aware, the business in which I am now engaged requires me to travel a great deal over the state. Our state institutions are widely scattered, and I am thus afforded an opportunity of seeing the methods that the farmers practice in agriculture in different parts of the state. I had supposed when I was at home on my own farm in Iowa county, that I had seen some of the worst work done on farms that possibly could be done, but when I travel throughout the state, I am inclined to believe that we were about as good farmers in Iowa county as can be found anywhere. It was my good fortune to pass forty years of my life on a farm in Iowa county surrounded by men who had been taught agriculture in Scotland and England, and there was always a rivalry as to who would do the work best. We had plowing contests every year, and I know if I were to tell some of the farmers of Iowa of the work done there, not only at contests, but all the time, they would scarcely believe it. When one goes about the state and takes notice of the poor plowing done and the poorly built, tumbled down fences on almost every hand, it certainly brings to one's mind the need of better training of our farmers. We now and then find men in our state institutions who clearly show their thorough training in farming. We have had a man at one of the hospitals for the insane that turned off work equal to that of any farmer in the state of Iowa. He is insane, but he can plow. A few years ago we had a man at the state penitentiary—he never would tell me where he came from, but I am satisfied he came from England—and that man planted thirty-five acres of potatoes and I would take an oath there wasn't one inch of variation in the furrows all the way through. I was early taught to carry a rule with me to measure the width of my furrows. I was told to plow nine inches deep, and my father used to stick the rule down and if there was the slightest variation, he would say, "Now, Johnnie, you 'aint getting that deep enough; this furrow here is not wide enough." Now that is the training I got in the work, and naturally I like to see work done that way yet.

THE IOWA STATE FAIR AND EXPOSITION.

BY JOHN COWNIE.

While we all recognize the almost marvelous growth of Iowa as an agricultural state and the progress that has been made in developing our material resources, it is particularly gratifying to know that the State

Agricultural Society has kept pace with the general prosperity and was never stronger financially or in the confidence of the people than it is today. The annual exhibits of live stock, consisting of the choicest animals of the respective breeds that can be found, has done more to create an interest in the improvement of farm animals than all other agencies combined.

The magnificent exhibits of farm implements and machines have enabled the dealer and the farmer to see for themselves the large and varied lines of all the leading manufacturers, that without a fair of this kind would have been known to but a few.

In poultry, dairying and horticulture everything possible has been done to educate the people to higher standards, and that success has crowned the efforts is abundantly attested by the place Iowa now holds among her sister states.

In the amusement department of the fair new attractions are being constantly sought after and while still encouraging the fullest exhibits of live stock, dairying, horticulture, farm implements, and machinery of all kinds used on the farm, would it not be well to add some new features? I do not mean to make new departments merely for the novelty, but to add something that would be of lasting benefit to the farmers of Iowa.

With this end in view I desire to offer a few suggestions in regard to some new features that would at least be of interest to the young men on the farms of Iowa, many of their fathers no doubt being convinced in their own minds that there is little for them to learn in regard to practical work on the farm that they do not already know.

One feature that would prove of immense benefit would be a plowing contest every year, not for the benefit of manufacturers of plows, but to test the skill of the plowman. I am aware that many will say, "I know all about plowing, having spent my life on a farm." But let me tell you that the chances are that you never saw a well plowed field in your life and with all your experience, if you were to apply for a position on a farm where agriculture is a science, the chances are that if put to work with a plow you would not be allowed to go across the field a second time.

As I travel over the state and see the farmers "plowing around the field" with the breastworks thrown up against the fences, or the huge ridge at the commencement of a land, with a ditch at the finish, with miniature hills and valleys, following each other as fast as the plow will make them, I often wonder how long it will take for the farmers of Iowa to learn that agriculture is a science.

As plowing is now done on the great majority of farms, a townsman who has perhaps never seen a plow can do as good work as the man who has been plowing all his life. Is such a condition creditable to the farmers of Iowa, and does it not belittle the high calling of a farmer that he cannot do his work with the skill of an ordinary mechanic?

It requires years of patient application to become an expert carpenter, blacksmith or shoemaker, and it requires just as careful training of the hand and eye to become a good plowman.

Let those who have seen plowing done in a proper manner tell of the beginning of a land with the plow without the semblance of a ridge, and that could scarcely be detected, of the straight furrows of a uniform depth and width, the surface of the plowed ground so even and uniform that a straight edge would touch every furrow when laid across the plowed ground.

By all means let us have a plowing contest at our state fair, offering a good premium, not to the manufacturers of plows, but to the plowman, and the young farmers of Iowa will then see that agriculture is a science, and that it requires as much ability and skill to do the work on a farm in a proper manner as it does in any of the learned professions. No wonder our young men are leaving the farms; there is no incentive for them to remain and follow in the ruts made by their fathers. The young men of today are aspiring and they see nothing in farm work that offers an opportunity for advancement, the most ignorant hired man doing his work about as well as his employer.

This condition should no longer exist and we should strive by every means in our power to raise the quality of the work upon our farms to such a high standard that our young men would see in farm life the greatest opportunities to show their skill and make them proud of the high calling of a farmer.

Fence building—even the digging of post holes in a scientific manner—is something that few farmers can do. The setting of the post, the bracing of the end posts, the stretching of the wire, would make an excellent subject for a contest at our state fair. Everyone who has the least conception of a straight line and a well built fence will agree with me that the greater part of our fences are far from being a credit to their owners. The loss from injury to live stock every year is a serious matter, and the greater part of this loss would be prevented by fences properly erected and kept in good repair.

The stacking of grain in such manner that the stacks would shed rain as well as the best shingle roof would be an object lesson to the farmers of Iowa, who evidently for a lack of knowledge in the art of stacking—for it is an art—follow the pernicious custom of threshing from the shock. The losses that have been sustained by allowing grain to stand in the field waiting for the threshing machine would, if prevented by proper and prompt stacking after the grain was harvested, in a few years pay and discharge in full every mortgage on every farm in Iowa.

Let the fair management raise some small grain, and offer a premium for the best erected stack at the next fair, and thus create an interest in this all important work.

And what can I say of the hay and the straw stacks to be seen in Iowa—heaps of hay and straw thrown together without skill, built in such manner that the wind and the rain are invited to come in, and make themselves at home, with all the hospitality possible accorded, and the wind and the rain accept the invitation so generously extended and do go in, and not only go in, but also take possession, and the loss to the farmers of Iowa every year from this cause is incalculable.

Here is one more attraction that could be added to the state fair, a contest in stacking hay or straw, a liberal premium to be given to the one who builds the most artistic stack, and proves after heavy rains that it is absolutely water-proof.

Is it any wonder that the farmers' sons are leaving the farms and seeking opportunities to test their skill, their energy, their perseverance and their ability to surmount obstacles, in competition with the young men raised in our towns and cities, and it must be said that the farmer's boy, trained to early rising, hard work, with a virtuous life and an earnestness and ambition that overcomes all obstacles, as a rule soon distances his competitor in the race.

I offer these suggestions to the fair management, not because I desire to criticise the farmers of Iowa in their work on the farm, for having striven all my adult life to elevate and ennoble the calling of a farmer, by striving with all my might to do all the work on a farm in the best and most scientific manner, I would fain have my fellow farmers feel the same thrill of pleasure that I have felt when performing with my own hands the work of the farm and creating a thing of utility and beauty that people passing on the highway would stop and admire.

But it will not only require the approval of the fair management to add these valuable attractions to our next exposition, of the best that our farms produce. We must have the hearty co-operation of the newspapers of the state, for without them to incite an interest among the farmers in this new departure, this getting out of the ruts, this effort to prove that modern agriculture is one of the fine arts, would fall flat and be an utter failure.

But I depend upon the press of Iowa to champion every good cause, and one that will advance the agricultural interests of our state as nothing else will do, would undoubtedly receive the most cordial support of the editors and proprietors of the newspapers of the state.

I remember well, when as a member of the state fair directors, calling late one night on Mr. R. P. Clarkson, editor of the Register, in an endeavor to secure his aid in bringing the state fair to the favorable attention of the people of the state. Unfortunately some things had occurred that aroused Mr. Clarkson's antagonism to one of the officers and the Register was far from friendly to the State Agricultural Society. In the editor's sanctum we talked over the matter for hours and at two o'clock in the morning, when I at last felt that I had accomplished my purpose, and was about to take my leave, this grand man of the most sterling integrity and unswerving devotion to the best interests of our state, grasped me by the hand, saying, "Mr. Cownie, the columns of the Register are open to you to advance the interests of the farmers of Iowa, and I will see that everything you send will appear in the Register and I will cooperate with you as far as I am able to build up the state fair."

At that time my name, as also the names of the other officers of the fair association, were on notes held by a Des Moines bank for about twenty thousand dollars, private citizens carrying an indebtedness, and responsible for its payment while stewards in charge of the property of the state.

That night, or rather morning, I went to the hotel with a lighter heart than I had had for many a day, assured that with the help of the press we could pay all expenses, discharge every obligation, principal and interest, and put the state fair on a solid foundation. Knowing as I did the financial difficulties that beset the officers of the society, myself included, and realizing that the dawn was approaching, is it any wonder that in my heart of hearts I reverve the memory of Richard P. Clarkson?

The other Des Moines newspapers heartily co-operated with the fair management, doing everything in their power to bring the fair out of the financial difficulties that had beset it for years, and I cannot allow this opportunity to pass without expressing my heartfelt thanks not only to the editors of the Des Moines newspapers, but also to the editors throughout the state, for their hearty co-operation in that critical period in the affairs of the agricultural society.

To bring the attention of the people of the state to the fact that a great state fair and exposition was to be held we wrote a letter to nearly every editor in Iowa, asking if they would include with one of their newspaper issues a supplement that we proposed to have printed, lauding the fair in the highest terms and inviting all the people of Iowa to attend.

We received the most favorable responses to our request and we negotiated with the Western Newspaper Union for two hundred and fifty thousand printed sheets, newspaper size, to which order an additional hundred thousand was afterwards added, when we had ascertained that that number would be required to supply the demand.

Shortly after all the supplements had been issued we received a communication from the then postmaster general stating that we were violating the postal rules in thus sending supplements to local newspapers to be mailed without payment of postage and asking us to desist from such infraction of the postal laws. To me the duty was assigned to reply to the postmaster general's courteous letter and I humbly apologized in behalf of the society, promising that we would desist, which we did, but three hundred and fifty thousand supplements to Iowa newspapers had been distributed among the people of our state.

Now mark the result. The attendance and receipts were large beyond our most sanguine expectations, and we were enabled to pay all the expenses of the fair and wipe out every dollar of indebtedness, principal and interest, and from that day to this the officers of the State Agricultural Society have not been required to pledge their personal credit for the debts of a state institution.

Not only the officers of the fair, but also the people of the state owe a debt of gratitude they never can repay to the editors of Iowa for their aid at a time when the fate of the fair was trembling in the balance. The officers were getting uneasy at being called upon year after year to assume the obligations of an institution in which they had no more interest than any other citizen of the state, except that by the votes of their constituents they had been chosen to assume the responsibility of managing an institution that the best people of the state believed would conduce in no small degree in developing the agricultural resources of the state.

Threats were openly made by the directors to tender their resignation each year when new notes had to be signed for money borrowed at the banks to make up the deficit in the receipts.

The first duty required of me after being elected a director of the Iowa State Agricultural Society was to sign my name to notes aggregating twenty thousand dollars, and I am frank to confess that when signing my name with men of whose financial ability I was ignorant, the cold chills ran up my back and my hand trembled as I thought of the price I was paying for the honor of being a director of the Iowa state fair.

But as I look back to those days of trial and final victory I esteem it as one of the most gratifying periods of my life that I served as director, vice president and president of the Iowa State Agricultural Society and only severed my connection with it when it was out of debt and the foundation laid for future prosperity.

All this is ancient history, well known to the former officers of the society, and I only refer to it as showing that it requires united effort and hearty co-operation of the press of the state to insure a successful State Fair. The well conducted modern newspaper molds in no small degree public opinion, and he who thinks that a great enterprise can be successfully conducted without the aid of the press has yet much to learn.

Unfortunately for the fair there was some antagonism manifested towards the management the present year by some of the newspapers of the state, their proprietors no doubt believing that they were entitled to some more compensation for their work in behalf of the fair than admission at the gate, a privilege that many are unable to accept. On the other hand the fair is a state institution, entirely different from a private enterprise, or a corporation, where the profits are to accrue to the individual or the firm. No matter how great the receipts of the fair may be over the expenses, no director of the society receives more than $4.00 per day, all the profits going to the betterment of the grounds, the title to which is in the State of Iowa.

Since the fair has been financially successful, great improvements have been made by the erection of new buildings, the legislature having made generous appropriations for this purpose, and these appropriations have been supplemented by the surplus left, after paying the legitimate expenses of the fair. If the State Agricultural Society had been required to pay in the past for all the complimentary notices it has received at the hands of the press it would have long since ceased to exist, and it is questionable if it could even now exist and pay even a fraction of the values it receives from the press of the state.

The Iowa Fair and Exposition is a state institution, its chief aim and purpose being to advance the agricultural resources of the state, and in doing so every farmer who attends these annual fairs must be stupid indeed if he does not profit by something he has seen.

To get the necessary information in regard to the fair the farmer must depend upon the enterprise of the newspapers and largely to those that are published locally, so that, in fact, he is the one that secures the greatest profit by the timely publication in his home paper of the attractions offered by the state fair. And as a subscriber to a newspaper he has a right to expect that he will be kept duly informed of what is going on in his own state. When the legislature is in session he wants to know what the lawmakers are doing and the enterprising newspaper will keep him informed. In like manner he desires to know of the new attractions at the state fair, and if the suggestions made in this paper are adopted by the fair management it is only by giving them the widest publicity that they can be made a success. And I do not believe that there is a single editor of a newspaper in Iowa who will willingly withhold from his readers anything that he believes will conduce to more scientific methods in performing the necessary labor on a farm.

In behalf of the young farmers of this state, who are willing and anxious to get out of the old ruts, who realize that agriculture is a science and that skill and faithful application will be as well rewarded on the farm as in the business world, I appeal to the fair management to add new attractions such as I have indicated.

I have referred to the young men leaving the farm and I do not blame them, for myself I would not stay one day on a farm if I could not do work with my hands in which I could take a pardonable pride and realize that farm labor was something more than drudgery that could be performed without skill or previous training.

To you, gentlemen of the State Fair management, who are looking for attractions that are novel and attractive, I would commend the suggestions in this paper. And in thus affording an opportunity to the young farmers of Iowa to see for themselves that there is both science and art in farm labor well performed and in the rivalry that will be encouraged, and the interest that will be created from year to year, you will have the hearty co-operation of the press of Iowa and the best wishes of the good people of our state.

THE PRESIDENT: This will close our program for this morning. I want to call your attention to the fact that delegates should leave their credentials at the desk.

We will stand adjourned until two o'clock P. M.

WEDNESDAY AFTERNOON SESSION.

Convention met at 1:30 P. M. pursuant to adjournment, with President Cameron in the chair.

The Committee on Credentials submitted the following report, and on motion of the chairman the report was adopted:

REPORT OF COMMITTEE ON CREDENTIALS.

Gentlemen: We, the Committee on Credentials, report the attached list duly elected and entitled to vote in this convention.

E. J. CURTIN,
T. W. PURCELL,
L. H. PICKARD,
Committee.

DELEGATES FROM COUNTY AND DISTRICT AGRICULTURAL SOCIETIES.

Buena Vista County Agricultural Society	A. L. Denio, Alta
Calhoun County Agricultural Society	C. G. Koskey, Manson
Cass County Agricultural Society	E. F. Berg, Atlantic

Massena District Fair Association	D. P. Hogan, Massena
Cerro Gordo County, Northern Iowa Agricultural Society	G. H. Purdy, Mason City
Strawberry Point District Agricultural Society	J. C. Flenniken, Strawberry Point
Clinton District Fair Association	J. O. Shaff, Shaffton
Crawford County Agricultural Society	Thos. Rae, Arion
Davis County Agricultural Society	J. M. Lain
Floyd County Agricultural Society	John R. Waller, Rockford
Franklin County Agricultural Society	Floyd Gillett, Hampton
Grundy County Agricultural Society	H. N. Dilly, Grundy Center
Guthrie County Agricultural Society	A. H. Grissell, Guthrie Center
Hancock County Agricultural Society	Jas. L. Manuel, Britt
Hardin County Agricultural Society	H. S. Martin, Eldora
Henry County Agricultural Society	O. N. Knight, Mt. Pleasant
Iowa County Agricultural Society	Alex McLennan, Marengo
Victor District Agricultural Society	J. P. Bolling, Victor
Jackson County Agricultural Society	Ed Phillips, Maquoketa
What Cheer District Agricultural Society	F. H. Beeman, What Cheer
Kossuth County Agricultural Society	A. R. Corey, Wesley
Louisa County Agricultural Society	E. Colton, Columbus City
Columbus Junction District Fair Association	T. H. Grubb, Columbus Junction
Lyon County Fair and Agricultural Association	A. S. Wold, Rock Rapids
Madison County Agricultural Society	Elmer Orris, Winterset
Marshall County Fair Association	J. B. Clausen, Marshalltown
Eden District Agricultural Society	H. G. Buck, Rhodes
Mitchell County Agricultural Society	W. H. H. Gable, Osage
Monona County Fair Association	John Sundeberg, Whiting
Union District Agricultural Society	J. A. Peters, West Liberty
Poweshiek County Central Agricultural Society	Jas. Nowak, Malcom
Sac County Agricultural Society	Phil Schaller, Sac City
Shelby County Agricultural Society	L. H. Pickard, Harlan
Sioux County Agricultural Society	J. F. Morris, Ireton
Creston District Fair Association	W. W. Morrow, Afton
Forest City Park and Fair Association	V. A. Jones, Forest City
Winneshiek County Agricultural Society	E. J. Curtin, Decorah
Wright County Agricultural Society	Sam Nelson, Clarion

DELEGATES FROM COUNTIES IN WHICH NO FAIRS WERE REPORTED FOR THE YEAR 1907.

Clarke County	J. L. Long, Osceola
Dallas County	Chas. Rhinehart, Dallas Center
Decatur County	G. W. Hoffman, Leon
Greene County	Albert Head, Jefferson
Ida County	D. M. Hester, Ida Grove
Montgomery County	W. S. Ellis, Red Oak
Polk County	Lew Burnett, Des Moines

Ringgold County	F. E. Sheldon, Mt. Ayr
Washington County	D. J. Palmer, Washington

DELEGATES FROM COUNTY FARMERS' INSTITUTES.

Adair County	A. C. Savage, Adair
Buena Vista County	S. R. Haines, Storm Lake
Calhoun County	Henry Parsons, Rockwell City
Cerro Gordo County	D. McArthur, Mason City
Clinton County	E. C. Forest, Miles
Dallas County	Geo. M. Fox, Dallas Center
Dickinson County	J. H. Gregory, Spirit Lake
Emmet County	H. W. Woods, Estherville
Franklin County	T. W. Purcell, Hampton
Guthrie County	S. J. Read, Guthrie Center
Hancock County	John Schwab, Corwith
Ida County	A. C. Garner, Ida Grove
Madison County	T. J. Hudson, Winterset
Mahaska County	F. F. Everett, Lacey
Marion County	George Simpson, Knoxville
Marshall County	E. M. Wentworth, State Center
Mitchell County	W. Harvey Richards, Osage
Monona County	O. J. Easton, Whiting
Monroe County	E. B. Morris, Albia
Polk County	W. B. Ashby, Grimes
O'Brien County	D. L. Packham, Paullina
Sac County	Harry Baxter, Sac City
Story County	W. P. George, Ames
Warren County	E. B. Igo, Indianola
Winnebago County	Eugene Secor, Forest City
Wright County	F. A. Thayer, Dows

DELEGATES FROM OTHER SOCIETIES AND ASSOCIATIONS.

State Historical Society	Wesley Greene, Davenport

IOWA STATE BOARD OF AGRICULTURE.

Ex-officio.

State Dairy and Food Commissioner	H. R. Wright, Des Moines
State Veterinarian	Dr. P. O. Koto, Forest City

Officers.

President	C. E. Cameron, Alta
Vice President	W. C. Brown, Clarion
Treasurer	G. D. Ellyson, Des Moines
Secretary	J. C. Simpson, Des Moines

District Members.

First District	R. S. Johnston, Columbus Junction
Second District	C. W. Phillips, Maquoketa
Third District	E. M. Reeves, Waverly
Fourth District	R. T. St. John, Riceville
Fifth District	S. B. Packard, Marshalltown
Sixth District	T. C. Lego, What Cheer
Seventh District	C. F. Curtiss, Ames
Eighth District	John Ledgerwood, Leon
Ninth District	M. McDonald, Bayard
Tenth District	O. A. Olson, Forest City
Eleventh District	H. L. Pike, Whiting

Mr. President: The convention will now proceed to the election of the following officers of the State Board of Agriculture:

President.
Vice President.
Member from the First District.
Member from the Third District.
Member from the Fifth District.
Member from the Seventh District.
Member from the Ninth District.
Member from the Eleventh District.

The President named as tellers: T. C. Legoe of Keokuk county, Wm. Clarke of Marshall county and John McMullan of Pocahontas county.

Vice-President Brown took the chair and called for nominations for president. Mr. Haines of Buena Vista county placed in nomination for president, Mr. C. E. Cameron to succeed himself. Mr. Grissell seconded the motion and moved that the secretary be instructed to cast the entire vote of the convention for Mr. Cameron. Seconded by Mr. Schaller of Sac county. Motion prevailed. The secretary so cast the vote and Mr. Cameron was declared duly elected President of the State Board of Agriculture for the ensuing year.

President Cameron again took the chair and called for nominations for Vice-President. Mr. T. W. Purcell of Franklin county placed in nomination Mr. W. C. Brown of Wright county to succeed himself and moved that the secretary be instructed to cast the entire vote of the convention for Mr. Brown. Seconded by Mr. St. John. Motion prevailed. The secretary so cast the vote, and Mr. Brown was declared duly elected Vice-President of the State Board of Agriculture for the ensuing year.

Mr. D. J. Palmer of Washington county placed in nomination for member of the board of the First District Mr. R. S. Johnston of Louisa county to succeed himself, and moved if there were no further nominations that the secretary be instructed to cast the entire vote of the convention for Mr. Johnston. Seconded by Mr. Legoe. Motion prevailed. Secretary so cast the vote, and Mr. Johnston was declared duly elected member of the Board from the First District for the term of two years.

Mr. Van Houten of Taylor county placed in nomination for member of the Board from the Third District, Mr. E. M. Reeves of Bremer county to succeed himself. Mr. McDonald seconded the nomination and moved if there were no other nominations that the rule be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Reeves. Motion prevailed. The secretary so cast the vote, and Mr. Reeves was declared duly elected member of the Board from the Third District for the term of two years.

Mr. Classen of Marshall county nominated Mr. S. B. Packard of Marshall county to succeed himself as member of the Board from the Third District. Mr. Buck of Marshall seconded the motion, and moved that the rule be susended and the secretary instructed to cast the entire vote of the convention for Mr. Packard. Seconded by Mr. St. John. Motion prevailed. The secretary so cast the vote, and Mr. Packard was declared duly elected member of the Board from the Fifth District for the term of two years.

Mr. Wentworth of Story county placed in nomination for member of the Board from the Seventh District, Mr. C. F. Curtiss of Story county to succeed himself. Mr. Grissell of Guthrie county seconded the nomination and moved that the secretary be instructed to cast the entire vote of the convention for Mr. Curtiss. Motion prevailed. The secretary so cast the vote, and Mr. Curtiss was declared duly elected member of the Board from the Seventh District for the term of two years.

Mr. John Cownie nominated Mr. M. McDonald of Guthrie county to succeed himself as member of the Board from the Ninth District. Seconded by Mr. Schaller of Sac county, who moved that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. McDonald. Motion prevailed. The secretary so cast the vote, and Mr. McDonald was declared duly elected member of the Board from the Ninth District for the term of two years.

Mr. Easton of Ida county nominated Mr. H. L. Pike of Monona county to succeed himself as member of the Board from the Eleventh District. Mr. Sundberg of Ida county seconded the motion and moved that the nomination be made unanimous and the secretary instructed to cast the entire vote of the convention for Mr. Pike.

Motion prevailed. The secretary so cast the vote, and Mr. Pike was declared duly elected member of the Board from the Eleventh District for the term of two years.

The Committee on Resolutions submitted the following report. Mr. Denio moved that the report be adopted, which was seconded by Mr. Purcell. Motion prevailed.

REPORT OF COMMITTEE ON RESOLUTIONS.

Your Committee on Resolutions respectfully report the following:

The large attendance at this meeting indicates the continued interest that the farmers of Iowa have in agriculture, horticulture, etc.

The exhibit of corn and the extensive exhibit of fruit speaks in the highest terms of the productive qualities of the soil of Iowa and this convention extends to the officers and directors of the State Board of Agriculture thanks for the program arranged for this meeting.

The officers and directors of the State Board of Agriculture are especially commended for their efforts in securing the large increase in exhibits and the great success of the Iowa State Fair and Exposition of 1907. This was accomplished only by extraordinary efforts of the officers in working for the success of each department. Had the weather been favorable we believe the fair of 1907 would have been the greatest one ever held in the United States.

We hereby extend our thanks to the State Board of Agriculture for its efforts in securing the enactment of the law for the prevention of adulteration and misbranding of condimental stock foods and commercial feeding stuffs and the regulating of sales of agricultural seeds, and in securing the passage of other laws in the interest of agriculture.

We extend our hearty thanks to the speakers who have appeared on the program, and are especially grateful to Mr. E. W. Randall of Minnesota for his presence at the Iowa agricultural convention.

WHEREAS, The present accommodations provided for the various departments on the State Fair Grounds are inadequate for the transaction of the business in the proper manner, as well as being extremely inconvenient for all exhibitors and patrons of the fair; therefore, be it

Resolved, That we earnestly recommend the erection of a suitable Administration Building of sufficient capacity for the convenient use of all the officers and superintendents, at the earliest possible moment.

Respectfully submitted,

C. W. HOFFMAN,
H. S. MARTIN,
A. L. DENIO,
Committee on Resolutions.

There being no further business, on motion the convention adjourned *sine die*.

PART V.

SYNOPSIS OF PROCEEDINGS OF STATE BOARD OF AGRICULTURE AND COMMITTEE MEETINGS,

1907.

EXECUTIVE COMMITTEE MEETING.

January 16, 17 and 18, 1907.

Committee met on call of the president with all members present.

The matter of vaudeville attractions for the State Fair of 1907 was considered but the closing of contracts was deferred until a later meeting.

Bonds of the secretary and treasurer were presented and approved

Arrangements were made whereby the treasurer, G. D. **Ellyson,** agreed to pay, through the Marquardt Savings Bank, four per cent interest on the $15,000.00 reserve fund and two per cent on the daily balance of the State Fair funds.

Secretary notified the committee that the Greater Des Moines committee had deeded to the state the strip of land known as the Redhead Tract, lying between the south line of the Fair Grounds and the Rock Island switch.

Architect O. O. Smith presented plans and estimates on an amphitheater and a hog barn, and the committee decided to recommend to the General Assembly that the appropriation for such buildings be made in the following amounts: $75,000.00 for a steel constructed amphitheater and $75,000.00 for a hog barn and show pavillion. Secretary was instructed to have such bills prepared and introduced at the earliest possible date.

Mr. A. L. Denio, Superintendent of the Speed Department, met with the committee and the speed program for 1907 was made out.

The matter of fakir and novelty stands in the Agricultural building was discussed and the committee agreed to abolish such concessions in that building.

Bills to the amount of $776.72 were approved and the secretary instructed to issue warrants in payment thereof.

EXECUTIVE COMMITTEE MEETING.

February 20, 21, 22 and 23, 1907.

Committee met on call of president with all members present; also the following members of the Board, R. S. Johnston of the First District, C. W. Phillips of the Second District, R. T. St. John of the Fourth District, John Ledgerwood of the Eighth District, and O. A. Olson of the Tenth District, also A. L. Denio, Superintendent of the Speed Department.

Mr. G. W. Bissell, the engineer employed by the board to plan a new electric lighting system, submitted a report. Action was postponed until a later meeting when a more extensive report would be submitted.

Secretary presented a corn classification for the Fair of 1907, also a revision of the classification for county exhibits, all of which was approved and adopted by the committee and the members present.

Claims to the amount of $655.89, for which warrants had been issued since the last meeting, were approved.

Members of the auditing committee being present, all bills on file were passed upon and secretary authorized to issue warrants in payment thereof.

Secretary presented a classification for Suffolk Punch horses as submitted by the superintendent of the horse department, C. F. Curtiss, which was approved and ordered printed in the premium list.

The executive committee, together with the other members of the board present and some men prominent in the swine breeding industry, appeared before the Senate Appropriation committee and were given a hearing on Senate File No. 94, relative to the improvements on the State Fair Grounds. The same gentlemen appeared before the House Appropriations committee the following day in regard to the same matter.

EXECUTIVE COMMITTEE MEETING.

March 19, 20 and 21, 1907.

Committee met on call of president with all members present.

Representatives of a number of advertising manufacturers were present and the committee placed orders for advertising matter for the State Fair.

The matter of amusements and vaudeville attractions for the State Fair was considered and contracts were closed for the following: Innes' Orchestral Band, several vaudeville acts, and the pyrotechnic show "Vesuvius" produced by the Pain Pyrotechnic Company of New York.

Mr. G. W. Bissell, the electrical engineer employed to devise a new electric light system for the fair grounds, was instructed to prepare plans and specifications for a plant, such plant not to exceed an estimated cost of $10,000.

The Secretary was authorized as follows:

To have the architect prepare a sketch of the floor plan for the proposed new horse barns.

To purchase woven wire fence sufficient to fence the land recently secured as an addition to the fair grounds.

To instruct the architects to complete plans and specifications for the proposed hog barn and show pavilion.

MEETING OF STATE BOARD OF AGRICULTURE.

April 5, 1907.

Board met on call of the Executive Committee and on roll call the following members were found to be present: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, St. John, Packard, Legoe, Curtiss, Ledgerwood, McDonald, Olson and Pike.

The object of the meeting was to consider plans and specifications and authorize the letting of contract for the construction of the hog barn and show pavilion for which the general assembly appropriated $75,000, also to authorize the letting of contracts for the horse barn, etc. On motion the following resolution was adopted:

Resolved, That the board approve the plans for the hog barn and show pavilion submitted by Smith, Wetherell & Gage, and that the executive committee be and they are hereby authorized and instructed to advertise for bids for the erection of the hog barn and show pavilion provided for by the appropriation of $75,000 granted by the Thirty-second General Assembly, and be it further

Resolved, That they are hereby authorized and instructed to award contract to the lowest responsible bidder, limiting the total amount of the cost of construction, including architects' fees, to the appropriation granted for this purpose.

The board on motion approved the general plan of the horse barn and authorized the executive committee, together with the Superintendent of the Horse Department, to have plans and specifications prepared by the architects and when completed to advertise for bids and award contract for the erection of same.

On motion the salary of the Superintendent of Grounds was fixed at $1,000 per year, with the proviso that $100 additional be paid during the year 1907.

Mr. G. W. Bissell submitted a report on the proposed electric light system and on motion of Mr. Johnston the executive committee was instructed and authorized as follows: To finish plans and specifications for the electric light plant and when same were ready to advertise for bids and award contracts, limiting the cost to $10,000.

The president appointed the following Committee on Per Diem and Mileage: Mr. Johnston, Mr. Olson and Mr. Reeves.

The Committee on Per Diem and Mileage reported as follows and on motion of Mr. Pike the report was adopted:

	Days	Rate	Amount	Miles	Amoudt	Total
C. E. Cameron	3	$4.00	12	140	$14.00	$26.00
W. C. Brown	3	4.00	12	102	10.20	22.20
R. S. Johnston	3	4.00	12	158	15.80	27.80
C. W. Phillips	3	4.00	12	...	......	12.00
E. M. Reeves	3	4.00	12	123	12.30	24.30
R. T. St. John	3	4.00	12	195	19.50	31.50
S. B. Packard	3	4.00	12	58	5.80	17.80
T. C. Legoe	3	4.00	12	100	10.00	22.00
C. F. Curtiss	3	4.00	12	39	3.90	15.90
Jno. Ledgerwood	3	4.00	12	87	8.70	20.70
M. McDonald	3	4.00	12	65	6.50	18.50
O. A. Olson	3	4.00	12	155	15.50	27.50
H. L. Pike	3	4.00	12	200	20.00	32.00
						$298.20

R. S. Johnston,
E. M. Reeves,
O. A. Olson,
Committee.

EXECUTIVE COMMITTEE MEETING.

April 6, 1907.

Committee met with all members present.

Committee visited the Fair Grounds and the secretary was instructed to authorize the Superintendent of Grounds to make the following improvements and repairs:

To rebuild the south line of fence so as to include the track of land known as the Redhead Tract recently deeded to the state.

To take down the old cattle shed south of cattle barn No. 10 and 13.

To have the street south of the new brick dining halls graded and lay a cement sidewalk twelve feet in width along the south side of this building.

To make a ditch for the construction of the water way running back of the brick dining halls.

To rebuild the fence along the south side of the clover field and to make any necessary repairs of fences on the east portion of the grounds.

To remove the Rock Island entrance south to the new line of fence.

To complete the curbing around the triangular piece of ground north and east of the secretary's office and have same filled ready for planting.

To change the course of the storm water sewer near the south entrance, running the same farther south so that it would not come under the proposed location for the new horse barn.

Secretary was authorized to close contracts with the Iowa State Letters Carriers' Band and Graham's Orchestra for engagement at the State Fair of 1907.

Committee named April 24th as the date on which to receive bids for the erection and completion of the electric light plant as per the plans and specifications furnished by Mr. G. W. Bissell.

Secretary was instructed to let contract for grading in connection with the new swine barn and show pavilion as per the plans and specifications shown by the architects, and if in his opinion the bids received were unreasonable, to instruct the Superintendent of Grounds to proceed with the grading at once.

MINUTES IN VACATION.

April 13, 1907.

As per the authority and instructions of the Executive Committee secretary open bids received for grading in connection with the hog barn and show pavilion. Only two bids were received, and after consulting the architects and the Superintendent of Grounds, contract was awarded to Smith & Day of Des Moines for $1,500, work to be completed within four weeks from the date of signing contract.

EXECUTIVE COMMITTEE MEETING.

April 24, 1907.

Committee met as per previous agreement with all members present, also Mr. G. W. Bissell.

Bids for the construction of the electric light plant were opened and the following contracts awarded: One 200 H-P engine, $1,670, Ball Engine Co. of Chicago; one 125 K. W. generator and switchboard, $1,669, Fort Wayne Electric Company of Fort Wayne, Ind.; forty arc lamps, $15.80 each, Western Electric Co. of Chicago; two 72'' 16 ft. boilers, $2,195, allowing $520 as part payment on above price for engine and boiler in the old light plant and the boiler and pump in the pumping station, Globe Machinery & Supply Company of Des Moines.

At the solicitation of the Greater Des Moines Committee, the Executive Committee agreed to allow the use of the grounds during a week or ten days in June, 1908, for the national meeting of the Dunkard church, providing the first named committee would bear all expense for preparing the grounds, the operation of the electric light plant, closets, pay for the water used, provide proper fire and police protection and leave the grounds in as good condition as they were at the beginning of the meeting, the State Board of Agriculture to be at no expense whatever in the matter.

Secretary was authorized and instructed to purchase two additional turnstiles.

EXECUTIVE COMMITTEE MEETING.

May 1, 1907.

Committee met with all members present, also board member R. S. Johnston.

Object of the meeting was to open bids for the construction of the swine barn and show pavilion and the following contracts were let: General contract, $38,235, J. B. McGorrisk of Des Moines; structural iron work, $29,300, Des Moines Bridge & Iron Works of

Des Moines; sewer and catch basins, $1,490, King-Lambert Company of Des Moines.

Committee named May 20th the date for receiving bids for erection of the horse barn.

EXECUTIVE COMMITTEE MEETING.

May 20, 1907.

Committee met as per previous arrangement to receive bids for the erection of the horse barn, with all members present, also board member C. F. Curtiss.

Only two bids were received and contract was awarded to Chas. Weitz' Sons for $9,651.03.

Committee decided to retain the old boiler and engine in the electric light plant, having an option on same for thirty days at $200.

EXECUTIVE COMMITTEE MEETING.

June 5, 1907.

Committee met with all members present. Bids were opened for the construction of the electric light and power house and the foundation for the boilers and engines. The bid of Chas. Weitz' Sons for $2,853.56 was accepted and architects instructed to draw up contract with Mr. Weitz as per bid.

On the recommendation of Mr. G. W. Bissell, the proposition of the Globe Machinery & Supply Company to erect the smoke stack and do whatever work necessary in connecting up the boilers and engines in the power house, for $260, was accepted and Secretary instructed to draw contract in accordance with such proposition.

EXECUTIVE COMMITTEE MEETING.

July 3, 1907.

Committee met with all members present. Business of a general character was transacted and committee visited the Fair Grounds to inspect the improvements under way.

EXECUTIVE COMMITTEE MEETING.

July 12, 1907.

Committee met with the President and Secretary present.

Secretary presented an offer from W. W. Potts for laying cement floor in the pens of the new swine barn, amounting to approximately

$2,900, and contract was entered into with Mr. Potts for this work.

Contract for cement walk in front of brick dining halls was let to Mr. Potts.

EXECUTIVE COMMITTEE MEETING.

August 6, 1907.

Committee met with all members present, and business of a general character in connection with the fair was transacted.

MEETING OF THE STATE BOARD OF AGRICULTURE.

August 23, 1907.

Board met at the president's office on the Fair Grounds at eight o'clock p. m. with the following members present: Cameron, Brown, Simpson, Johnston, Reeves, St. John, Packard, Legoe, Ledgerwood, McDonald, Olson, Pike and Ellyson. General business pertaining to the opening of the fair was transacted.

MEETING OF THE STATE BOARD OF AGRICULTURE.

August 29, 1907.

Board met at the president's office at the Fair Grounds with the following members present: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, St. John, Packard, Ledgerwood, McDonald and Olson. The purpose of the meeting was to agree upon a settlement with Roy Knabenshue, owner of the airship which had been engaged as an attraction and which was destroyed by fire on Wednesday night of the fair, and such settlement was agreed upon.

On motion the board adjourned.

MEETING OF THE STATE BOARD OF AGRICULTURE.

August 31, 1907.

Board met at the president's office on the Fair Grounds, at nine o'clock a. m. with the following members present: Cameron, Brown, Simpson, Ellyson, Johnston, Reeves, St. John, Packard, Legoe, Ledgerwood, McDonald, Olson and Pike.

The following pay rolls were presented and allowed:

Floriculture department, $72.50, presented by J. C. Simpson.
Horticultural department, $35.00, presented by E. M. Reeves.

Treasurer's department, $808.30, presented by G. D. Ellyson.
Police department, $1,217.50, presented by M. McDonald.
Cattle department, $623.20, presented by S. B. Packard.
Horse department, $557.55, presented by J. C. Simpson.
Swine department, $457.85, presented by R. S. Johnston.
Privilege department, $249.03, presented by W. C. Brown.
Machinery department, $245.75, presented by John Ledgerwood.
Art department, $451.50, presented by T. G. Legoe.
President's department, $12.00, presented by J. C. Simpson.
Speed department, $296.30, presented by J. C. Simpson.
Ticket department, $233.00, presented by J. C. Simpson.
Forage department, $317.00, presented by J. C. Simpson.
Secretary's department, $405.25, presented by J. C. Simpson.
Sheep and poultry departments, $189.70, presented by H. L. Pike.
Gate department, $1,475.00, presented by Mr. Olson.
Agricultural department, $446.25, presented by R. T. St. John.
Grounds, $91.69, presented by J. C. Simpson.
Dairy department, $212.45, presented by J. C. Simpson.

The president appointed as Committee on Per Diem and Mileage, Messrs. Johnston, Olson and Ledgerwood.

Several small bills of a general nature were presented and allowed by the board.

Committee on Per Diem and Mileage submitted the following report and on motion same was adopted:

Committee on per diem and mileage reported as follows:

	Days	Rate	Amount	Miles	Amount	Total
C. E. Cameron	19	4.00	76.00	140	14.00	90.00
W. C. Brown	37	4.00	148.00	102	10.20	158.20
R. S. Johnston	19	4.00	76.00	158	15.80	91.80
C. W. Phillips	19	4.00	76.00	...	......	76.00
E. M. Reeves	18	4.00	72.00	125	12.50	84.50
R. T. St. John	21	4.00	84.00	195	19.50	103.50
S. B. Packard	18	4.00	72.00	58	5.80	77.80
T. C. Legoe	20	4.00	80.00	100	10.00	90.00
Chas. F. Curtiss	19	4.00	76.00	37	3.70	79.70
John Ledgerwood	25	4.00	100.00	87	8.70	108.70
M. McDonald	19	4.00	76.00	65	6.50	82.50
O. A. Olson	19	4.00	76.00	155	15.50	91.50
H. L. Pike	20	4.00	80.00	200	20.00	100.00

R. S. JOHNSTON,
O. A. OLSON,
JOHN LEDGERWOOD,
Committee.

On motion of Mr. Packard the board adjourned.

EXECUTIVE AND AUDITING COMMITTEE MEETING.

September 19 and 20, 1907.

Executive committee met with all members present for the purpose of making final settlement with contractors for the swine barn, horse barn, electric light and power house and the machinery installed in same. Secretary was instructed to issue warrants in payment of the balances shown, as follows:

J. B. McGorrisk, general contractor, for swine barn:

Total amount of contract	$38,235.30	
For extra lumber	869.18	
Total	$39,104.48	$39,104.48
Previously paid	$28,020.40	
By credits	275.00	
	$28,295.40	$28,295.40
Balance due		$10,809.08

Des Moines Bridge & Iron company. Contract for structural iron work.

Total amount of contract	$29,300.00
Previously paid	28,500.00
Balance due	$ 800.00

King-Lambert company. Contract for sewer.

Amount of contract	$ 1,490.00	
Extras	67.20	
Total	$ 1,557.20	$ 1,557.20
Previously paid		696.58
Balance due		$ 860.62

Due architects:

Swine barn, 4 per cent of	$74,395.80	
Horse barn, 4 per cent of	9,651.03	
Power station, 4 per cent of	3,300.56	
Four per cent of	$87,347.39	$ 3,493.89
Previously paid		2,456.29
Balance due		$ 1,037.60

Chas. Weitz Sons., contract for horse barn:

Amount of contract	$ 9,651.03	
Extras	31.50	
Total	$ 9,682.53	$ 9,682.53
Previously paid		7,651.03
Balance due		$ 2,031.50

Chas. Weitz Sons, contract for electric light and power station:

Amount of building contract	$ 2,853.56	
Addition	447.00	
Total	$ 3,300.56	$ 3,300.56
Previously paid	$ 2,805.48	
Credit by deduction	144.77	
Total	$ 2,950.25	$ 2,950.25
Balance due		$ 350.31

Secretary was also instructed to issue warrants in payment of all bills audited by the Auditing committee.

The matter of insurance on fair grounds buildings was considered and Secretary was instructed to place general form insurance for three years upon the following buildings: the new horse barn, the swine barn and the show pavilion, and the electric light and power house and equipment.

The Auditing committee met with members Legoe and Johnston present. Committee examined and audited all bills on file in the secretary's office to date.

EXECUTIVE COMMITTEE MEETING.

September 30, October 1, 1907.

Committee met on call of the president with all members present. Business of a general character was transacted and program prepared for the winter meeting.

MEETING OF THE STATE BOARD OF AGRICULTURE.

December 12, 1907.

Board met at the office of the secretary at 9:30 a. m., Wednesday, December 12th. Meeting was called to order by the president and the following members responded to roll call: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, St. John, Packard, Curtiss, Ledgerwood, McDonald, Olson, Pike and Wright.

H. L. Bosquet, Deputy Clerk of the Supreme Court, administered the oath of office to the following newly elected members: Cameron, Brown, Johnston, Reeves, Packard, Curtiss, McDonald and Pike.

On motion the board proceeded to the election of secretary and treasurer.

Mr. Johnston moved that J. C. Simpson be elected secretary for the ensuing year, at a salary of eighteen hundred dollars ($1,800) per annum. Seconded by Mr. St. John. Motion was made unanimous and Mr. Simpson declared elected secretary for the ensuing year.

Mr. Olson nominated for treasurer G. S. Gilbertson. Mr. Ledgerwood seconded the nomination and moved that same be made unanimous and the secretary instructed to cast the vote of the board for Mr. Gilbertson. Motion prevailed and Mr. Gilbertson was declared elected treasurer for the ensuing year. Mr. Packard offered the following resolution and moved its adoption; seconded by Mr. Curtiss:

"*Resolved*, That the bond of the treasurer be fixed at seventy-five thousand dollars ($75,000), subject to the approval of the executive committee, and be it further

"*Resolved*, That the salary of the treasurer shall be one hundred dollars ($100) per annum."

Motion prevailed.

Mr. McDonald moved that Jas. H. Deemer be elected superintendent of fair grounds for the ensuing year at a salary of one thousand dollars ($1,000) per annum. Seconded by Mr. St. John. Motion prevailed.

On motion of Mr. Legoe, seconded by Mr. McDonald, the following marshals for the State Fair of 1908 were elected: T. D. Doke, Bloomfield; C. M. Akes, Leon; Carl Shields, Afton; and T. J. Hudson, Winterset.

Secretary read the report of the Executive committee, reviewing in detail the work of the said committee during the past year and the improvements made. A schedule of estimated receipts and expenditures for the year 1908 and suggestions for new improvements were presented. The report in full is on file in the record book of the department.

Secretary read the resignation of J. R. Sage, Director of the Iowa Weather and Crop Service, to take effect December 31, 1907. Mr. Packard moved that the board recommend to the governor as Mr. Sage's successor, Geo. M. Chappel. Seconded by Mr. St. John. Motion prevailed.

On motion of Mr. Ledgerwood the board adjourned until 1:30 P. M.

AFTERNOON SESSION.

Board met pursuant to adjournment with the following members present: Cameron, Brown, Simpson, Johnston, Phillips, Reeves, St. John, Packard, Legoe, Ledgerwood, McDonald, Olson, Pike and Wright.

The board decided to open the fair one day earlier than heretofore, and to charge admission on Friday and Saturday the first week of the fair. Saturday, the 22nd, was fixed as children's day.

The bond of Treasurer G. S. Gilbertson for $75,000 was presented, approved by the Executive committee and filed with the treasurer of state.

Compensation of marshals, police, ticket takers and ticket sellers, and other employes for the fair of 1908 was fixed at the same rate as for the previous year.

On motion of Mr. Legoe, the board adjourned until 9 A. M. Friday.

MEETING OF THE STATE BOARD OF AGRICULTURE.

December 13, 1907.

Board met at 9 o'clock A. M. pursuant to adjournment with President Cameron presiding. On roll call the following members were found to be present: Cameron, Brown, Simpson, Johnston, Reeves, St. John, Packard, Legoe, Curtiss, Ledgerwood, McDonald, Olson, Pike and Wright.

The chairman of the committee on Adulteration of Foods, Seeds and other Products, reported as follows:

REPORT OF COMMITTEE ON ADULTERATION OF FOODS, SEEDS AND OTHER PRODUCTS.

Your committee held one meeting at Ames, June 24, and formulated plans for the investigation of the weeds of the state in public places; form (No. 1) for an address to the people of the state and form (No. 2) question blank signed by the committee, for general circulation, also form (No. 3), signed by Prof. Curtiss through the Experiment Station at Ames to all county supervisors and township trustees, with return government franked envelopes for replies. Secretary Simpson of the Department of Agriculture supplied your committee with 2,000 copies of form No. 1, 1,000 copies of form No. 2 and 6,000 copies of form No. 3. A copy of each form is appended. The committee's address, form No. 1, was distributed by Mr. Wright to the press of the state and form No. 3 by Prof. Curtiss, as sub-committees. The response by the press was not what was anticipated, although quite a number of newspapers published the address. Coming under the chairman's notice, the Times-Republican of Marshalltown, the Ames Intelligencer and the Iowa Recorder of Greene, Butler county, have published the address and given a stirring endorsement to the committee. The chairman sent a few copies of form No. 2 under cover with his correspondence to different parts of the state so as not to incur cost in postage and received replies generally to them. An examination of these shows Canada Thistle or Quack Grass is returned in every case and in all but two instances both these weeds are mentioned as existing by such correspondents. Mr. Wright, for the committee, and Prof. Pammell, at the request of Prof. Curtiss, attended the meeting of the state association of county supervisors held at Clinton in July and secured formal action endorsing the work of this committee and promising assistance and co-operation. Reports received from the inspectors in the employ of the food and dairy department indicate lax execution of the present laws requiring weed cutting by railroads. In this respect the Great Western, the Rock Island neglected portions of their right of way and the Cascade branch of the Milwaukee went without cutting.

Report of the work undertaken by the botany department at the college under the direction of Prof. Curtiss is attached, showing the returns received from the circulars of inquiry sent out and compilation for these reports showing the prevalence of noxious weeds.

S. B. PACKARD,
C. F. CURTISS,
H. R. WRIGHT,

Form No. 1.

COMMITTEE ON ADULTERATION OF FOODS, SEEDS AND OTHER PRODUCTS OF THE IOWA STATE DEPARTMENT OF AGRICULTURE.

WEED INVESTIGATION.

To the Public:

The State Board of Agriculture, at its last meeting, passed the following resolution:

WHEREAS, The alarming increase of noxious weeds in the state makes it proper for the State Board of Agriculture to make an investigation with the view of ascertaining the best way to remedy these evils, and to suggest necessary legislation to impose upon the county supervisor or township trustee, or both, the authority of the law to eradicate these pests.

Resolved, That the Committee on Adulteration of Foods, Seeds and Other Products are instructed to investigate the subject and to report from time to time; that the sum of five hundred dollars, or as much thereof as may be necessary, is hereby appropriated for expenses for the year of 1907.

The undersigned committee, in view of the law passed regulating the sale of agricultural seeds and prohibiting their adulteration, desire to bring to the notice of the farmers of the state the importance of this investigation, to the end that all noxious weeds already existing shall be brought to the attention of the authorities and by systematic effort shall be eventually eradicated, that we may put an end to the contamination of Iowa grown agricultural seeds with foul weed seeds.

With the aid of the staff of the agricultural college and the help of the farmers, county supervisors, township trustees and road supervisors, the committee expects to locate all the patches of noxious weeds, whether in public or private grounds, such weeds as Canada thistle, Russian thistle, quack grass, wild mustard and wild oats. Also, to determine the extent of the infection of the less refractory but not less mischievous weeds in the public roads and highways, such as sweet clover, squirrel-tailed grass, curled and smooth dock, bracted plantain, buckhorn, common mustard, alfalfa, field dodder, and other well known noxious or difficult weeds.

The committee will have the services of Professor Pammell and his assistants to aid in the study of the best methods for the extermination of each particular weed of annual, biennial or perennial growth, and to recommend to the general assembly such revision of the weed laws as will effectually require the county or township authorities to inaugurate a crusade against all noxious weeds.

The committee invites all the farmers' institutes, officers of county and district agricultural societies, and that most potent of all reformatory organizations, the women's clubs, to lend their services to the awakening of the public to the demands of the fair and fertile soil of Iowa, to make an end to its infection with vicious weed and the resultant seed dissemination in the public highways, railway grounds, in private lots and public places.

The committee will supply question sheets, to be filled out and returned. The information thus secured from farmers and others interested and informed in regard to the weeds in their respective localities will be invaluable to the committee and appreciated accordingly by them.

Respectfully,

S. B. Packard, Marshalltown, Ia.
C. F. Curtiss, Ames, Ia.
H. R. Wright, Des Moines, Ia.
Committee.

Form No. 2.

COMMITTEE ON ADULTERATION OF FOODS, SEEDS AND OTHER PRODUCTS OF THE IOWA STATE DEPARTMENT OF AGRICULTURE.

WEED INVESTIGATION.

Dear Sir:

The information requested below will be of very great assistance in the weed investigation. Will you kindly answer the questions below as far as you are able and return to us. Yours very truly,

S. B. Packard, Marshalltown, Ia.
C. F. Curtiss, Ames, Ia.
H. R. Wright, Des Moines, Ia.
Committee.

1. Are any of the following named weeds, or other weeds that are difficult to kill, found in your vicinity? Please check those that occur or add the names of others:

Quack Grass
Wild Mustard
Canada Thistle
Wild Oats
Sweet Clover
Clover Dodder
Alfalfa Dodder
Field Dodder
Cowbane

Corn Cockle
Squirrel-tail
Marsh Elder
Cocklebur
Curled Dock
Smooth Dock
Horse Nettle
Jimson Weed

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....
....

2. If there are any noxious weeds in your vicinity, of which you do not know the name, please send samples to Prof. L. H. Pammel, Ames, Iowa, for identification.

3. Are the weeds you have namd found in the highways?............
Railway right of way?..................Private grounds?..............

4. What methods that have been used to eradicate these weeds have failed?..

5. What methods have been used successfully?......................

Signed..

Township...

County...

State..

Date..............................
Form No. 3.

COMMITTEE ON ADULTERATION OF FOODS, SEEDS AND OTHER PRODUCTS OF THE IOWA STATE DEPARTMENT OF AGRICULTURE.

WEED INVESTIGATION.

Iowa Experiment Station, Ames, Iowa, July 20, 1907.

Dear Sir:

The information requested below will be of very great assistance in the weed investigation, being conducted by the Iowa Experiment Station, in co-operation with the State Department of Agriculture. Will you kindly answer the questions below as far as you are able and return to us?

Yours very truly,

C. F. Curtiss,
Director.

The remainder of form No. 3 is the same as form No. 2.

TO THE COMMITTEE ON ADULTERATION OF FOODS, SEEDS AND OTHER PRODUCTS OF THE IOWA STATE DEPARTMENT OF AGRICULTURE.

I beg leave to report concerning the investigation ordered under your direction. During the fall about 4,000 circulars to be filled out were sent to the township trustees and county supervisors and others in the State.

Of the circulars sent out we received 335 replies, receiving reports from sixty-nine different counties, and thirteen reports not having blanks for township and county filled out. Considering the time of the year this is a fairly good return of reports. The reports were from the counties as follows:

Adams	5
Appanoose	1
Audubon	6
Benton	2
Black Hawk	1
Buchanan	8
Buena Vista	2
Butler	2
Carroll	6
Cass	3
Cerro Gordo	3
Cherokee	9
Chickasaw	10
Clarke	4
Clayton	9
Clinton	2
Dallas	10
Decorah	1
Delaware	1
Dickinson	4
Dubuque	6
Fayette	3
Floyd	9
Franklin	8
Greene	14
Grundy	4
Guthrie	2
Hamilton	1
Hancock	3
Henry	4
Howard	1
Humboldt	4
Ida	1
Iowa	7
Jackson	7
Jefferson	7
Johnson	4
Jones	3
Keokuk	1
Kossuth	1
Lee	5
Linn	16
Louisa	2
Lyon	11
Madison	5
Marion	4
Marshall	6
Mills	6
Monona	9
Muscatine	1
O'Brien	8
Osceola	2
Palo Alto	1
Plymouth	7
Pocahontas	1
Sac	1
Sioux	12
Story	2
Tama	1
Taylor	5
Union	1
Van Buren	8
Warren	8
Washington	1
Webster	3
Winnebago	9
Winneshiek	15
Woodbury	3
Wright	2

Counties from which no reports were received: Adair, Allamakee, Boone, Bremer, Calhoun, Cedar, Clay, Crawford, Davis, Des Moines, Emmet, Fremont, Hardin, Harrison, Jasper, Lucas, Mahaska, Monroe, Mitchell, Montgomery, Page, Polk, Pottawattamie, Poweshiek, Ringgold, Scott, Shelby, Wapello, Wayne, Worth.

We received answers to the replies as follows:

One hundred and fifty-four answered all the questions, checking the most important weeds in Question 1.

Three hundred and twenty-seven checked some of the weeds given in Question 1.

Three hundred and two replies were received to Question 3. Of these 264 listed certain weeds found in private grounds and 286 did the same for weeds of highways; only 138 replies were received with reference to weeds along the railways.

Two hundred and thirty-nine replied with reference to the methods that were used in exterminating the weeds. In most cases the method given was that of mowing.

Two hundred and fifty-five make some answer with reference to the methods that were most successful and these answers were generally the method of thorough cultivation.

With reference to the answers that were returned we had a fairly good number, about 335 in all. It is of particular interest because of the number of reports received, and especially the interest taken in the weed investigation.

The following is a list of the number of times each weed was reported: Quack grass 197, wild mustard 229, Canada thistle 160, wild oats 83, sweet clover 223, clover dodder 16, alfalfa dodder 1, field dodder 3, cowbane 18, corn cockle 25, squirrel tail 225, marsh elder 19, cocklebur 295, curled dock 115, smooth dock 130, horse nettle 81, jimpson weed 134, blackheart 1, blackweed 1, big gopher vine 1, buffalo bur 1, bull thistle 7, burdock 23, crabgrass 1, dandelion 3, dog fennel 3, dock 1, devil's shoestring 1, English smartweed 1, field daisy 1, foxtail 4, hemp 6, horse sorrel 3, heart's ease 1, horse weed 1, hedge mustard 2, iron weed 3, lamb's quarter 1, morning-glory 40, milkweed 6, nut grass 2, ox-eye daisy 2, plantain 2, prairie stalk 1, pepper grass 1, pigweed 1, prickly lettuce 3, Russian thistle 11, ragweed 16, redroot 1, reptop 1, smartweed 8, sorrel 2, sheepsorrel 2, sunflower 7, spiny nightshade 1, sour dock 10, sand bur 8, Spanish needle 6, tan weed 2, velvet weed 46, willow 1, water dock 1, wild artichokes 6, wild buckwheat 2, wild carrot 1, wild lettuce 2, wild parsnip 7, wild rose 2, wild rye 2, yellow dock 2.

In going over this list you will notice that a number of weeds are reported much more frequently than others, among these are the following: Cocklebur, wild mustard, squirrel-tail, sweet clover, quack grass, Canada thistle, jimpson weed, smooth dock, curled dock, wild oats, horse nettle, velvet weed, tan weed and morning-glory. You will notice also in this connection that the dodders are becoming more numerous in this state. This list does not take into account some of the very common weeds found in the state, among them the ragweed, smartweed, foxtail and a host of others.

With reference to the reports of weeds on highways, sixty-seven report the weeds mentioned in the list as occurring along the highways, and especially important were the sweet clover, Canada thistle, quack grass, cocklebur, dock, squirrel-tail, dodder and mustard. Seventy-eight report the weeds in the list as occurring on private grounds, making special mention of jimpson weed, cocklebur, velvet weed, smartweed, foxtail, milkweed, mustard, quack grass and Canada thistle. Only a very small number of correspondents report the presence of weeds along railroads, out of the reports received only twenty-five reported the weeds listed as occurring along railroads, making special mention of dock, Canada thistle and quack grass.

I might add to these reports that have been received and gone through with that, take the state as a whole, we find the same general class of weeds along roadsides as are found in the fields, and that in many instances the fields become infested with the weeds that are permitted to grow along the roadsides. Thus in Northern Iowa, especially in the two northern tiers of counties, mustard is quite as prevalent along the roadsides as in the fields, and there is abundant opportunity for these weeds to be scattered by the snow and water in the winter and spring.

In the northern part of the state, east of Kossuth county to the Mississippi river and north along the line of the Chicago Northwestern railroad, the quack grass is particularly abundant, and seems to be spreading at a very rapid rate. Cocklebur is particularly common in the southern half of the state and is spreading northward to a considerable extent. The common horse nettle is spreading rapidly in the southern part of the state, and within fifteen years has spread nearly to the Minnesota line. Such weeds as ragweed, morning-glory and milkweed are native and common in the state, but cultivation has caused them to spread and become more numerous.

Such weeds as squirrel-tail grass and bull thistle and foxtail, all native to Europe, have spread over the greater portion of the state of Iowa because they have such excellent means of dispersal. We have had also frequent requests for the methods and means of exterminating tan weed, which is known as Muhlenberg's smartweed. Northern nut grass, too, has been frequently reported as occurring in low grounds. I have had many requests for the identification of droopseed grass or nimble-will, which is generally mistaken for quack grass. This grass is native to the state and spreads by underground stems very much in the manner that quack grass does, except that the roots are shorter and thicker; usually, however, this weed has not given as much trouble in fields as quack grass and morning-glory.

No one can question for a moment the importance of exterminating these weeds. A few dollars will exterminate a small patch of quack grass of Canadian thistle at this time, but in ten years it will require hundreds of dollars to exterminate the same weeds. Therefore, legislation along this line is urgently needed.

Judging from the replies that I have received on this matter I should say that very little effort is being made, except mowing, to exterminate the weeds along the roadsides. The following methods for exterminating these weeds were elicited from the replies received: Burning of seed; the prevention of seeding; thorough cultivation; salt and sheep; summer fallow; for the dock to pull when the ground is moist or to dig down with a spade and cut it off; one writer says: "I have found no weed that does not yield to persistent and intelligent warfare against it, except the butterprint; that requires a man to camp in his field three months a year for twenty-five years." Another writer says: "A field of quack grass owned by H. L. Emmert, Sibley, Iowa, was the worst quarter section in this country. Portions of it he plowed and kept black continually; some was planted to millet and some to buckwheat. A force of men worked the worst places with forks and this year he planted most of the land to corn. A large number of teams were kept cultivating the corn and now the land is practically free from all foul weeds." Many reports that fall plowing is inefficient, that mowing early is inefficient, that mowing before seeding is inefficient, salt brine is inefficient; that pasturing with sheep is practically successful; covering quack grass with straw is partially successful; smothering with tar paper is successful. Cocklebur can be exterminated by not allowing to seed for three years; wild oats after kept down for two years will be destroyed; salt is recommended for Canada thistle, and especially if cattle are permitted to feed in the field. Here are some suggestions for quack grass: Take up and dry on fence; cover with straw; plow continually; use millet; use buckwheat; plant to corn; summer fallow.

It appears from the above investigation that there are no uniform methods for controlling the weed problem in the state, either as to the weeds found on private premises, roadsides, or along railroads, and that all efforts made to destroy the weeds along highways are more or less spasmodic. With the increase in the price of land it will become more and more imperative that the farmers must till better and the weeds along the highways must be kept down, in order to prevent seedage in the farms adjacent. A few dollars will exterminate a weed when first observed but when it has got a stand it will take hundreds of dollars or even thousands of dollars to exterminate the same.

I was told at Clinton at the meeting of the road supervisors that one farmer spent over one thousand dollars on a farm in Minnesota in exterminating quack grass. It is certainly true that the presence of weeds lessens the value of land. During the past summer I have received several communications from intended purchasers of land, who desired to know the value of land where Canada thistle and quack grass occurred, or if when present these weeds could be exterminated, and how to exterminate them and would I advise buying land where quack grass occurred in abundance.

I beg leave to make this preliminary report at this time, and hope to continue the investigation and report further at some other time.

C. F. CURTISS,
BY L. H. PAMMEL.

The board created a new department of the Fair, to be known as the Department of Live Stock Sanitation, with the state veterinarian, Dr. P. O. Koto, superintendent in charge.

On motion of Mr. Johnston, August 20th to 28th inclusive, were fixed as the dates for the Iowa State Fair and Exposition of 1908.

The committee on resolutions reported as follows.

RESOLUTION OF RESIGNATION OF HON. J. R. SAGE.

WHEREAS, The Iowa State Board of Agriculture, in annual meeting assembled, has been advised of the resignation of Hon. J. R. Sage, who for years has most efficiently and with much credit to himself and this board, who has annually recommended his appointment, performed the duties of director of the Iowa Weather and Crop Bureau; therefore, be it

Resolved, That it is the sense of this board in the resignation of Mr. Sage from this important office that the state of Iowa has lost a most valued servant.

R. T. St. John,
M. McDonald,
John Ledgerwood,
Committee.

Mr. St. John moved the adoption of the above resolution. Seconded by Mr. Brown. Motion prevailed.

Whereas, The Des Moines Commercial Club, the Greater Des Moines Committee and the East Des Moines Commercial Club rendered valuable assistance in obtaining from the Thirty-second General Assembly the appropriation for the purchase of additional land lying south of the State Fair grounds, and

Whereas, Said committees rendered valuable assistance in caring for the visitors of the Iowa State Fair and Exposition of 1907 in establishing and maintaining bureaus of information throughout the days of the fair, therefore, be it

Resolved, That the hearty thanks of the Iowa State Board of Agriculture, in annual meeting assembled, is extended for the valuable assistance rendered, and be it further

Resolved, That a copy of these resolutions be drawn and forwarded to the committees and clubs named.

R. T. St. John,
M. McDonald,
John Ledgerwood,
Committee.

On motion of Mr. St. John the foregoing resolution was unanimously adopted.

RESOLUTIONS OF CONDOLENCE AND MEMORIAL.

MRS. S. B. PACKARD,
MR. FRANK M. PHILLIPS,
Deceased.

Whereas, During the year that is now drawing to a close the homes of two of our esteemed colleagues have been visited by the messenger of death, taking the wife of Governor Packard, and Frank M. Phillips, youngest brother of our member, Mr. Phillips; therefore, be it

Resolved, That the Iowa State Board of Agriculture, in annual meeting assembled, do hereby extend our heartfelt sympathies to the families of the deceased in their sad bereavement.

R. T. St. John,
M. McDonald,
John Ledgerwood,
Committee.

On motion of Mr. St. John the above resolution was adopted by a rising vote.

The board instructed the Executive committee to have plans and specifications prepared for an administration building on the fair grounds, advertise for bids for the construction of same and to call a board meeting to further consider the advisability of erecting such building during the season of 1908.

The revision of the premium list was taken up and classifications added for Guernsey cattle and Hampshire hogs. A detailed statement of classifications as adopted and additional changes will be found in the premium list for 1908.

On motion the board adjourned until 2 o'clock P. M.

AFTERNOON SESSION.

Board met pursuant to adjournment with the following members present: Cameron, Brown, Simpson, Gilbertson, Johnston, Phillips, Reeves, St. John, Packard, Curtiss, Ledgerwood, Olson, Pike and Wright.

The president appointed as committee on Per Diem and Mileage Messrs. Ledgerwood, Pike and Johnston.

Mr. Packard presented the following resolution and moved its adoption; seconded by Mr. St. John. Motion prevailed.

WHEREAS, The reports of federal meat inspectors show bovine tuberculosis to prevail in scattered localities throughout the state, therefore, be it

Resolved, That the State Board of Agriculture, through its secretary, invite the management of packing houses to report, on January 1st, the number of cattle and swine having origin in Iowa which, during the preceding month, have been found upon post-mortem inspection to be tuberculous, and that similar reports be made monthly thereafter; when practicable such reports to show the name of the seller and locality where the animals were produced.

Resolved, That all veterinary surgeons be requested to make to the secretary of the Department of Agriculture similar reports in regard to animals which they test.

Resolved, That the committee on contagious diseases be instructed to investigate and report on the best methods to be pursued to eradicate the disease from Iowa cattle and swine.

MR. PACKARD: It is believed that all the packing houses will co-operate with the Department of Agriculture in clearing the state of this dreadful disease. At present the packing houses, knowing the percentage of loss by tuberculosis, make their prices and amounts low, sufficient to recoup their losses. In other words, if you and I ship and sell healthy animals our prices are cut enough lower for the purpose of making good the loss they have sustained by our neighbor's tuberculous animals that have been condemned and tanked.

Second, if the stockmen utilize the time between now and January first, there is time to stamp out tuberculosis and there will be no need of any legislation, save perhaps a law requiring a test of all registered stock brought into the state so that it may not be introduced. But will they? Will they undertake it, that is without legislation, to purify their herds from this disease? Its cause, probably, has been from conditions affecting the dairy herds. It may be fair to presume that the same condition will exist and the dairy people will not, unless the law compels it, clean up their herds. Therefore it is fair for us to discuss it from the standpoint of compelling by law the eradication of the disease.

Third, taking into consideration the fact that some pure bred stock is infected, there is a way of dealing with it believed not to require the entire loss of the breeding animals. As I understand it, arrangements have been made with the national authorities in pure bred herds whereby the herd after being tested can be separated and quarantined by themselves. If afterward they are bred, each calf is taken from the cow immediately and not allowed to take its milk, but is put with healthy cows; the calves are raised to maturity and are free from tuberculosis. So a man would not meet with total loss in a case of that kind. Therefore I say that with the pure bred herd it might be that the animal could be treated in that way. I suppose in an ordinary herd the only way would be that they would have to be destroyed.

For the purpose of introducing a discussion throughout the state, I want to suggest this toward the character of the legislation: Why would it not be well to enact a law requiring that cows from which milk is sold in the cities where the state now maintains an inspector, be tested for tuberculosis and no such cows allowed in the dairy herds? Why would it not be just for the law to give the packer recourse upon the dealer of diseased animals for the sum paid for them, thus making it advantageous for the owner to stamp the disease out of his herd? Why would it not be just, when by any means the disease is discovered in any herd, for the law to require the state veterinarian to test that herd and destroy all animals infected? Why should not the local butchers be restricted to the sale of tested meat?

That is all, Mr. President, that I have to suggest in reference to this resolution. I trust there will be a general expression.

Mr. Simpson: Do I understand you to say that you want only reports from the packers in Iowa of the stock killed in Iowa?

Mr. Packard: This resolution requires Iowa packers.

Mr. Simpson: Do you think that will give you the information you want?

Mr. Packard: I thought the other packers could not separate their stock and office records, but I should understand that the secretary in eliciting this information would be free to go not only to the veterinarians and packers in the state, but to go to any other source in the end that all information on the number and locality of the disease may be known to the State Department of Agriculture, and if the packers outside the state would respond to the same inquiries I think it would be quite right to request it there.

Mr. Curtiss: There has been discovered recently, within the past few years, that there is an alarming increase of tuberculosis in hogs. And as nearly as can be ascertained, the hogs most seriously affected are those in the dairy states, like Wisconsin, Iowa and other states similarly situated. As the members of the board doubtless know, the packers undertook last summer to buy bulls and dairy stock and cows of that kind subject to post-mortem examination. This met with violent opposition on the part of the commission houses, and the packers finally receded from their position and have gone back to the old basis. The ground for objection that the commission houses gave was that there were so many of the smaller packing houses around and outside the city, outside of the larger packers of Chicago, which buy this stuff that it would be impossible to sell to them subject to this post-morten examination, and I think there is probably some justification for this position at present. And that objection will probably exist until government inspection is established in a larger number of houses, or practically all of the houses. The commission houses take the position that it would limit the sale of that kind of stuff to a few houses and thereby give them a monopoly. I think it is quite clearly demonstrated that those outside firms are an important factor in buying that kind of stuff, for during the period of seven weeks while this controversy was on and while the larger houses bought no stock of this kind, the commission houses refusing to sell them, they disposed of all that kind of stock to smaller and outside firms, and after the first week the prices advanced steadily. That indicates that concerns aside from the larger houses were able to consume that kind of stock without decrease in price. I think it is unfortunate, however, that that condition exists, and I hope it may be remedied by government inspection. If some of the stock could be inspected it would trace the disease back to the producer and the burden of loss placed on the man who furnished diseased stock. That, of course would be incentive to each man whose herd is infected to clean up his herd and reduce the loss as much as possible.

There is one suggestion which Governor Packard made in the form of a question which I think we are not ready for yet; in fact, I doubt if it would be a wise or successful policy—that is as to the state veterinarian or other veterinarians inspecting and testing a suspected herd and condemning all the animals. That would be the policy of wholesale slaughter undertaken in other states with great loss. I think a more rational and conservative policy should be adopted. It is well known that a good many of the reacting animals are not so badly diseased as to in any way impair the value of their carcass for meat, and where the test is applied the owner ought to have the privilege of selling subject to post-mortem examination. Then the animals, although reacting, if found to be in such condition as not to render the carcass unfit for food, could be disposed of for full value. It is also well known now that tuberculosis is not a hereditary disease, and that the offspring of animals that are infected with tuberculosis may, by means of isolation, be raised free from the disease. This is important, of course, in case of valuable breeding herds where animals reacting can be kept separate and the offspring kept separate and raised to a healthy and sound condition. I think a large part of the disease as it exists in this and other states is undoubtedly traceable to disease existing in cattle fed on the same farm or through the milk as it comes from the creamery. This, of course, is a means of distributing the disease. We conducted an experiment at Ames the past year in which it was conclusively demonstrated that milk is a means of transmitting the disease and that tuberculosis is readily communicable through disease. There was a law passed in this state a year ago last winter requiring that all skim milk and buttermilk be returned from the creamery be Pasteurized. And I understand from Mr. Wright that this law is quite generally observed. I think it is an important measure and one that ought to be fully and carefully observed, for undoubtedly that is one of the most common means of distributing the disease, from the fact that tuberculosis is found in hogs more largely in the dairy districts. Of course, the disease is not confined to the dairy herds; in fact, it is found to fully as large degree in beef herds; but I think if we can adopt some policy that we could eradicate the disease from cattle that the matter of disease in hogs, the seriousness of the disease in hogs, will largely disappear, for the average life of a hog is so short and they are so constantly changing on the farm, that if the cattle were free I think the disease would soon disappear from the hogs.

MR. ST. JOHN: I heartily concur with the Governor's resolution, but as I understand the question of legislation from the Governor's remarks, of course, it is absolutely necessary to destroy the animals. I have given that some thought a good many years. Knowing some cases where it would be a hardship among the farmers, I believe it is just so far as my judgment goes, and believe there should be some legislation along that line. I don't believe you will ever stamp out tuberculosis in this state until some such law is enacted, for this reason—I know of people who have herds of pure bred cattle, and being convinced that tuberculosis is prevalent in the herds, simply keep quite, for no man knows this except the man who cares for them, until he not only makes a great damage for the state at large but also to himself; and I do not believe the state will be successful in stamping out the disease until some law is enacted to warrant the farmer to take hold of it and he will so notify the authorities and see that his herd is all right. I believe in saving all I could of them, but I do not understand the Governor to make wholesale slaughter.

MR. PACKARD: My remarks suggested two or three ways of reaching it. First, one to demand that the cows be inspected; second, that the packers have recourse against the seller; and third, if you do not like either of these two, would you be suited with one which would authorize the state veterinarian to have authority wherever it was brought to his notice that there was an infected herd to enter and destroy those that in his judgment were past cure? That would not mean to destroy any but those reacting.

MR. CURTISS: The matter of legislation along this line is a pretty large subject, and this involves a matter of so much importance to the live stock and agricultural interests of the state that it will have to be approached with a good deal of careful consideration. There is one difficulty with the method which you suggest, Governor, and that is that there is no means of detecting, except in the most advanced stages of the disease, the degree to which this disease exists in animals. The tuberculin test will give as strong a reaction in animals having minute particles of the disease as in the animals that are in an advanced stage of the disease. So there is no means of determining the stage of the disease in animals. The condition of the animal with reference to tuberculosis can only be determined, in the majority of cases at least, by post-mortem examination. So I do not think our stock breeders would stand for a system of putting the tuberculin test and condemning all the animals that react. I do not believe it would be a good policy to advocate; but I believe we will have to approach it by more rational and conservative methods. If the government inspection can be extended so as to be established through practically all of the packing houses, the smaller as well as the larger, it would in the first place insure wholesome and sound meat in the market. In addition to this, if we had that system it would enable the disease to be traced back to the farm where it originated and enable the stock to be sold subject to post-mortem examination. It seems to me that this is the most feasible plan of solution of this problem. If we can arrive at a system which will enable the disease to be traced back to the farm it would be very easy of solution, because the burden then falls on the man whose herd has the disease and it is to his interests to eradicate the disease. I believe pressure along this line, as well as along the other lines suggested, viz., not bringing the animals into the state without subjecting them to the test, and the test of dairy herds supplying milk to the public, would go a good way toward solving this question. I think, also, the legislation concerning Pasteurization of skim milk should be made to cover buttermilk.

Mr. Wright: It may be of interest to know that the law with regard to the Pasteurization of milk will not reach many of the farmers, for the reason that from six to seven tenths of the butter is made from cream that is skimmed on the farm and the skim milk never leaves the farm, so is not Pasteurized.

Mr. Curtiss: There is this feature to that situation—it does not permit the disease to extend beyond that farm.

Mr. Wright: So that the Pasteurization of milk is not universal in the state. There is another feature that appeals to me particularly, and that is that there seems to be a very great interest on the part of the people of the state who buy milk in the city in relation to the health of the cows producing that milk. The number of inquiries that we have is doubling and trebling every year, and there is more or less movement on foot now to enact some legislation regarding cows furnishing milk to the cities. People will be interested because it will not cost them anything to secure such legislation. Another thing is that there has been a regular epidemic in pure food matters, and when the people learn a little more about the proposition they will find that it applies principally to cheating in foods instead of to the ingredients. The stock men who will be affected financially when any such legislation occurs are very interested in that part of the legislation. There is a movement on foot now to require that all meat sold locally in the city of Des Moines be inspected both before and after the killing. The Sioux City and Davenport councils have already enacted ordinances to that effect; whether it will be carried out in the long run, some such thing will be carried out, and it seems to me the dairy people will get in the clear before that happens.

Mr. Packard moved that the fund provided for the investigations of the committee on Foods, Seeds and Other Products be open to the committee on the Contagious Diseases when such committee was appointed. Motion prevailed.

The committee on Per Diem and Mileage made the following report, and on motion of the chairman the same was adopted:

Mr. President: Your committee on per diem and mileage beg to report as follows:

Name.	Rate.	Amount.	Miles.	Amount.	Total.
C. E. Cameron	$4.00	$24.00	140	$14.00	$38.00
W. C. Brown	4.00	24.00	102	10.20	34.20
R. S. Johnston	4.00	24.00	158	15.80	39.80
C. W. Phillips	4.00	24.00	...	.....	24.00
E. M. Reeves	4.00	24.00	123	12.30	36.30
R. T. St. John	4.00	24.00	195	19.50	43.50
S. B. Packard	4.00	24.00	58	5.80	29.80
T. C. Legoe	4.00	20.00	100	10.00	30.00
Charles F. Curtiss	4.00	24.00	39	3.90	27.70
John Ledgerwood	4.00	24.00	87	8.70	32.70
M. McDonald	4.00	24.00	65	6.50	30.50
O. A. Olson	4.00	24.00	155	15.50	39.50
H. L. Pike	4.00	24.00	200	20.00	44.00

JOHN LEDGERWOOD,
H. L. PIKE,
R. S. JOHNSTON,
Committee.

Mr. St. John moved that the Executive committee be empowered to transact all unfinished business. Motion prevailed.

The president announced the standing committees for the year 1908. (List of assignments can be found in the front pages of this volume.)

On motion of Mr. Legoe the board adjourned.

PART VI.

PROCEEDINGS

OF THE

Annual Meeting of the Iowa Swine Breeders' Association

1907

BY C. C. CARLIN, SECRETARY.

OFFICERS.

WM. D. McTAVISH, PRESIDENT	*Coggon*
JOHN M. COX, JR., VICE-PRESIDENT	*Harlan*
J. A. BENSON, VICE-PRESIDENT	*Primghar*
C. C. CARLIN, SECRETARY AND TREASURER	*Des Moines*

EXECUTIVE COMMITTEE.

B. R. VALE	*Bonaparte*
W. Z. SWALLOW	*Waukee*
HARVEY JOHNSTON	*Logan*

The annual summer meeting of the Iowa Swine Breeders' Association took place at Des Moines on Tuesday, June 11th.

It was a representative gathering of men whose energies are devoted to the development of the swine breeding industry of the state of Iowa who met at the Savery house, in Des Moines, Tuesday, June 11th, the occasion being the annual summer meeting of the Iowa Swine Breeders' Association. More than one hundred members of the organization were in attendance, a larger number than has been present at any of the meetings of recent years. It is a gratifying promise for the future of any enterprise that those who conduct it are so nearly identified with that class of citizens upon whom depend the social, political and business integrity and honor of our great commonwealth. It is a flattering testimonial to the literary attainments of the farmers of Iowa, and an evidence of the deep consideration given the fundamental underlying principles of their business, that these men of few opportunities in the field of logic and eloquence should present a program of rare merit in its treatment of the subjects under discussion. The afternoon session was opened by Mr. Wm. D. McTavish, with the delivery of the following:

PRESIDENT'S ADDRESS.

A retrospective view of the work accomplished by our association during the past year, and the conditions prevailing throughout the state, give just reason for thankfulness and felicitation. Although there have been some losses in the swine herds from disease, yet it has been confined to localities and has not become general. The statistics show that on January 1, 1907, we had 8,587,500 hogs in Iowa, practically twice the number of any other state. Illinois came next with 4,449,705; Nebraska next with 4,080,000. Then Missouri with 3,454,950, and Indiana with 2,924,879, there being only three other states with 2,000,000. Texas, Kansas and Ohio; after which they drop down very rapidly. The total number of hogs in the United States was 54,794,439, so you will see that Iowa produced more than one-seventh of the number of hogs raised in the entire United States. When it comes to pork products we make a still better showing, owing to the heavier weights of our hogs, as shown by the valuation, the valuation of the hogs in Iowa being $81,552,750; those of the entire United States, $417,791,321. Thus it will be seen that Iowa produced a little more than one-fifth of the entire hog product in valuation. Notwithstanding this great production, we have realized five and six cents per pound right on the farms during all this time. The hog is truly "making Iowa famous," as well as wealthy. Our association is doing everything possible to promote the welfare of this great industry. Although it has done much in the past, yet there will be much more for it to do in the future which can only be accomplished by being thoroughly organized and working together in harmony.

We have reason to thank our legislature for recognizing the need of providing more suitable and sanitary quarters for the great swine show at the Iowa State Fair and appropriating $75,000 for the erection of the same. This was sorely needed, not only for the better accommodation of the show, but also as a means of safeguarding the swine herds from disease originating there. If a certificate of health and thorough inspection is now required of all exhibitors before coming on the grounds, there should be no bad results from this show. Much credit is due Hon. John McAllister of Linn county, who was really the father of this measure in the house. It was he who introduced the first bill a year ago last winter. The efficient work of ex-Senator Vale at the same session had much to do with the attitude the senate took towards our bill. The proficient work of Secretary Carlin and the valuable assistance of James Atkinson and W. Z. Swallow have been factors worth mentioning. We should also feel grateful to the state board of agriculture for asking for this appropriation.

This is the first appropriation the swine breeders of Iowa ever asked the legislature to make, and I really believe that by the proper enforcement of a rigid inspection and requiring exhibitors to make affidavit as to the health of their herds at home, it may save the taxpayers of Iowa twice the amount of the appropriation the first year. It cannot be expected that no disease will exist, but it will with proper precautions be reduced to a minimum, which was impossible before.

We are now entering upon another season, and it is only natural that we should anticipate upon what it has in store for us. The pig crop throughout the state is just reasonably good. Probably it is well that it is no better, owing to the backward condition of the grain crops, especially corn. The price of hogs has miantained a high level during the past year and from present indications will continue high. The outlook for a good grade the coming season depends very much on the corn crop. With the present high range of prices a reasonably good corn crop will make the prospects for a big trade very certain. The swine men of Iowa are worthy of all the prosperity that comes to them. They are one of the factors that have made the state as great as it is. By their industry they have acquired the power of progress. As president of our organization I have no new policies to recommend. I would suggest that as individuals we give the subject of tuberculosis our careful consideration and attention, keeping a very close lookout for it in our herds and breeding no animals that give any symptoms of it. This is not a note of alarm, but merely one of warning. There is no occasion for making a big fuss over this matter, such as was made a few years ago in the cattle business when whole herds were sacrificed to a test that was afterwards found to be inaccurate. But we as swine raisers owe it to ourselves and to the meat consuming public to know whether we are producing animals afflicted with this disease. As compared with other animals, and the number of hogs produced, the hog is comparatively free from it. By paying a little more attention to sanitary conditions and tanking suspicious animals, it is possible to reduce it to a point where it would not be a menace. As the use of the woven wire fence increased and the range for our hogs is enlarged, with the consequent healthy exercise and pure air, it will be much easier to cope with this as well as other diseases. For the number produced, I think that Iowa now has less diseased hogs than any other commonwealth. By continuing to labor for the progress and improvement of the swine industry of our state, we will fulfill the mission for which our association was organized.

Following the president's address came the first paper on the regular program, that of Mr. Harvey Johnson of Logan, Iowa, whose theme was:

PIGGY'S TROUBLES.

To the old breeder, this subject seems like an oft told tale, for we have seen it written about and heard it talked about until it does seem threadbare, indeed; and we have long since ceased to expect anything new about it.

But every year there are young men taking up this work and they have not yet come in contact with these troubles to any extent, and so, while the telling and re-telling of these stories may not be of any particular benefit to the old breeder, they may prove of untold value to the younger ones if they will but make use of the experience that is thus placed before them.

It has been said that "man is born to trouble." This applies very aptly to little pigs, and it does not make any difference to what breed they belong; nor whether they were sired by a hog that sold for $25.00 or one that pretends to sell for $25,000.00; nor whether they have for their dam the sow that holds the world's record for a high priced sow, or whether it is the good but homely old sow that we keep in the back lot out of sight. They are all subject to the same troubles, and require the greatest watchfulness to avoid them, or to successfully treat them.

Among the first troubles to appear will be sore mouths. This can often be avoided by removing the eight large teeth soon after farrowing. It is a form of blood poisoning and is usually started by lacerating each other's mouths in the struggle for location at the dinner table. When started and in bad form the proud flesh should be removed and then thoroughly cleansed with a dip of carbolic solution.

Next will be thumps—that trouble that always takes the prettiest and best, and the ones that we fancy are headed for the show ring. This trouble can better be avoided than treated when once acquired. I have tried a number of so-called remedies, but there is not one of them that I would recommend. Continual watchfulness is what counts here. Every pig that shows a tendency to get too fat should be made to exercise, and if this cannot be done sufficiently it should be removed from the sow and kept away at least a part of each day. Treated in this way they will be reduced in flesh, and when that is done the danger will be past.

Next will be scours, the most common and the most destructive of all the pig disorders. There are various causes for it, and fully as many remedies. Among the causes are: A sudden change to damp weather, wet and foul nests, overfeeding the sow, a sudden change of feed or feeding something sour. Among the remedies are: Reduce the sow's feed. If an old sow, feed less slops and more dry feeds. Feed her some parched corn, burnt flour, some soda, copperas or lime water. In our own work when a pronounced case appears we first clean the nest thoroughly, then apply air slacked lime and give fresh bedding. Then reduce the sow's feed and give her a teaspoonful of lime or copperas. In cases where the trouble seems to originate with the sow, we feed her soda or burnt flour or parched corn. In obstinate cases, those that will not yield to the usual treatment, we administer direct to the pig a dose of from three to five drops of laudanum.

The young pig will not live long before it will be troubled with worms. Some are not troubled to the extent that is noticeable, and others so badly that it is very noticeable, in the loss of appetite, dead appearance of the coat and in the general unthrifty condition. The diarrhoea that often appears in pigs of from six to twelve weeks old is almost always carried by worms, and when they are destroyed the trouble disappears at once. Worms are the cause of more troubles in pigs and young hogs than is often supposed. They get sick and die and we call it something else, when the truth is that worms did it. For treatment we have found nothing better than santonine. Take one ounce, dissolve in warm water, mix with slop and feed to seventy-five to a hundred head of pigs, depending on the age of the pigs. Feed it the first thing in the morning and repeat the dose in three or four days.

A little further along mange will make its appearance. This is the trouble that makes the skin look like old leather, dry and wrinkled. It is usually caused by sleeping in damp, foul nests, or by sleeping or working around manure piles. The best treatment for this is nitrate of lead. Take one pound, dissolve in hot water and add sufficient cold water to sprinkle thoroughly one hundred pigs. Repeat in four or five days. In bad individual cases, take a scrubbing brush and thoroughly rub it in. Hot, strong soap suds applied with a scrubbing brush is also very good. Kerosene and lard are good. Many of the dip preparations are good for mild cases, but are not as effective as the others and care must be taken when using them on young pigs. If made strong enough to be effective, they will seriously injure the eyes and give them a backset.

When the pig is a little older he can expect another trouble and that is pig measles. While all do not have it, it is quite a common July and August trouble among pigs. It is known by the fevered condition and the eruptions around the eyes and back of the ears, and in bad cases covers the entire body. A mixture of lard and sulphur with a little carbolic acid added is very good. In bad cases it should be applied warm and well rubbed in with a cloth.

These are the principle troubles that will come to the pig while he is small. When he has more age he will become eligible to hog cholera, swine fever and kindred ills, and this opens up a proposition that is fraught with deep mysteries, where the more we see of it the less we know about it; where a cloud seems to come into our lives and fortunes are lost. We will not touch on it for we dislike to think of it unless compelled to do so.

On every farm where hogs are raised to any extent there should be a dipping vat and it should be used regularly during the summer and fall, at least once in two weeks for pigs and young hogs and once in four weeks for older ones. I know of no one thing that will do as much toward eradicating disease and all the ills that pigs are heir to as will the intelligent use of the dipping tank.

Raising pigs can very truthfully be called detail work. He who would make it a success must enjoy the work and must be willing to look after the many details that demand attention and it will pay and pay well. Some think the occupation is crowded. But for the careful, honest young man who likes stock there is now and always will be a place, whether he breed pedigreed animals or raises them for the market.

While Mr. Johnson gave an excellent paper, it had additional merit in that it called out still further valuable information from men of practical experience. G. A. Munson of Maxwell, Iowa, said he had found an excellent remedy for scours to be venetian red given in two doses of one teaspoonful each. He, however, considered the best remedy dried blood, fed to the sow, in doses same as above. He would not otherwise change the diet or treatment of the sow.

One gentleman asked advice as to the treatment of sows affected with paralysis of the hind legs. L. H. Roberts of Paton, Iowa, said the trouble was due to lack of lime in the system, and he had found a little lime water given about every two weeks to be helpful. J. A. Benson of Primghar, Iowa, said the trouble was known as motor paralysis, and that affected animals have as good appetites as healthy ones. He had successfully used for it powdered ginger and ½ dram powdered anise seed, fed in slop twice a day. He gets his druggist to put it up in powders, and gets sixteen doses for twenty-five cents. He did not give this as an unfailing cure, but since he began to use it he had not known a sow so treated not to get up. A question as to the cause of the disease elicited no satisfactory reply.

J. M. Stewart of Ainsworth, Iowa, being unable to attend, had forwarded to the secretary his paper on the subject.

CARE AND MANAGEMENT OF LITTERS.

J. M. STEWART, AINSWORTH, IOWA.

The care of the litter is a subject which cannot be covered by one rule alone, as there are hardly two sows which can be handled alike at farrowing time and no two litters of pigs which require the same care to produce the desired results. One of the most essential things is to have the sow in proper condition at breeding time and to carry her along in good condition until time of farrowing. Yet you must be very careful to not overload the sow with fat, for that will make her sluggish, causing her to overlay her pigs. You must see that the sow gets plenty of exercise. It is a good plan to make her go at least twenty rods from her bed for feed and water. If she is properly fed and takes plenty of exercise you will have very little trouble at farrowing time. A sow in proper condition with a dry warm bed and plenty of bedding will generally take care of her own litter. Unless you spend a reasonable amount of time with the sows and gain their confidence there are very few that will peaceably permit you to handle their pigs. Sows that are easily disturbed and jump up every time you come near them had better be left entirely alone.

After farrowing leave the sow as quiet as possible and give her plenty of water near at hand so she may have it as often as she wishes. I feed dry oats and bran mixed for the first few days after farrowing, then gradually mix a little chop feed in the water and add a little corn to the oats and bran, until when the pigs are about ten days old I have her on full feed. No definite rule can be laid down here, because it all depends on the size of the litter and the amount of milk given by the sow. It is far better to underfeed than to overfeed for the first few days, but you must feed enough to keep the sow quit. After the second day if the weather permits, coax the sow away from her litter and induce her to take a little exercise each day. I generally call her out by the use of a little feed and when it is needed, clean out the pen and put in fresh bedding. Watch the pigs closely and if they begin to get too fat feed the sow less, but if they are not gettinng enough milk increase the feed. I keep the litters separated until the pigs are at least four weeks old, at which time there is little danger of them robbing one another. As soon as they are old enough I make them a feed pen where they can eat by themselves and then gradually shut off the feed on the sow and increase the feed for the pigs. A good clover pasture is one of the best things we can have for our pigs in central Iowa, for it gives us a protein in the cheapest way. Be careful about feeding the pigs too much corn. We have found the best feed is sweet milk, oats, mill-feed, some dry corn and whenever possible, good clover pasture. Too much corn makes the pigs fat and they do not have the bone that they should have to make a good desirable hog.

After the reading of Mr. Stewart's paper everybody wanted to talk. Discussion ran riot, bringing in points with but remote connection with the subject-matter. E. Z. Russell of Blair, Nebraska, at once jumped on dangerous ground by objecting to Mr. Stewarts' advice on feeding corn. He believed that suckling pigs, running on good clover pasture, could not be given too much corn.

On the point of reducing the feed of the sow at time of weaning the pigs, Mr. Munson said: "Pigs should be weaned gradually. I put my sows on dry oats and increase the feed of the pigs, and by this means naturally wean them away from the sow. Dry oats seems to give the milk a flavor that the pigs do not relish, and at the same time reduces the flow. If I am fitting a pig for a show, or fininshing it for market, I think it cannot be given too much corn. But if I am developing it to use as a breeder, then the less corn the better. If you will stop to think of what corn develops you will fed less of it. On good pasture corn is of course less objectionable, but if the pig is confined to an exclusive corn diet it does not develop but puts on fat. Corn is a fat producer alone, and cannot develop bone or muscle."

Responding to a query as to what was the proper condition of a brood sow, Mr. Russell said: "My method of feeding sows before farrowing is simple. I feed meal, bran, shorts when I can get it, and corn the rest of the time. In feeding corn I put it in the wagon and take it to the top of the hill, making them go after it and so take exercise whether they want it or not. I am not particular how much corn I leave in the field and they get a good deal there, but have to take exercise to get it. Exercise is one of the most important factors at farrowing time.''

Mr. McTavish appreciated the need of exercise for brood sows and obliged them to take it by making them sleep in a barn across a forty and come to the home place for feed.

F. E. Luther of Grand Junction, Iowa, said that while he did not raise hogs himself, he had opportunity to see many herds, and learned that the more exercise a sow took the better for her and her litter. He thought the breders of Nebraska had in the last five years led those of Iowa on that matter.

Mr. Munson reiterated some previous statements and added that the main things in keeping a sow in condition were exercise and sunshine. He has discarded oil meal for alfalfa, believing that it kept the bowels in better condition. Sows on exclusive corn are more apt to eat their pigs, as it produces a feverish condition and an abnormal appetite. His sows are given a little corn in extremely cold weather. A close observation of the droppings of an animal, he said, would give a better indication of its condition than anything else.

Aug. Sonneland thought that, rather than to adopt Mr. Munson's method of feeding, it would be better to move to Canada and raise bacon hogs.

Corn gained a champion in W. L. Willey of Menlo, Iowa, who said: ''Corn will make a hog. The best hogs, I find, have been raised on the yellow corn of Iowa and the yellow corn of Nebraska. Whenever you take away the yellow corn you take away the vitals of the hog. Oil meal, shorts and milk are good, and buttermilk is all right. The ultimate end of every hog is the pork barrel. I have been successful in getting sixth or seventh place at the state fair myself, but I will never lose sight of the pork barrel. What will mature a hog quickets? Will it be shorts and bran, or will it be corn—and, yes, a little buttermilk?''

H. F. Huffman of Washta, Iowa, said: ''What would you think if I said I was feeding nitrogenous foods altogether? The first time I visited the farm of Uncle William Roberts I found him feeding corn to his pigs. I asked him if he fed corn all the time, and said other breeders told me they fed oats and bran, etc. 'Do you know why?' he asked. 'They say that so you will do it. Then they will keep on feeding corn and go into the show ring and beat you. If you have clover pasture you cannot get corn enough.''

Mr. Luther again arose, saying. ''This meeting was called to discuss the methods of raising breeding stock. Breeding stock and stock for the pork barrel must be treated differently. If we feed all corn, there will be no bone, no muscle, no pig and no hog. We must feed to produce better hogs for the future, to keep up size and quality."

R. J. Harding of Macedonia, Iowa, said that corn had its place, that oil meal, bran and shorts were good, but that all go together, and no one alone should be relied upon.

Mr. McTavish considered the subject an important one, and thought that as long as hogs were raised in Iowa corn would be used as feed. It is indispensable to the hog raiser. He had paid 44 cents per bushel to feed to hogs that he sold for $2.90 per hundred. He had made money on them because they had been grown on good Iowa blue grass and buttermilk—stuff raised on the farm, with the corn as a finisher. Fence farms hog tight. It is the success of the hog business in the future. Turn the pigs out in the spring and let them get that bone and muscle forming food from the grass grown on the farm with clover, and some buttermilk, and then feed them corn. If you can supply the hogs with plenty of something to balance up that corn you will not give too much corn and you will not have any broken down hogs.

Harvey Johnson practices feeding a variety as much as possible. In winter time he provides alfalfa hay, keeping the fourth cutting for that purpose. He urged upon breeders the importance of alfalfa as a feed for brood sows. Those, however, who did not have alfalfa, should have second crop of clover. His buildings are so located that in winter the sows have access to the pastures, and in bright days they may generally be seen picking green stuff and getting exercise at the same time. He feeds plenty of oats and bran, and at night corn and alfalfa, with as much of the latter as they want. In stormy weather he feeds under a shed or on a good feeding floor.

Henry Door of Remsen, Iowa, put his alfalfa hay through a cutter and fed it with ground oats, as he found feeding alfalfa hay wasteful. He moistened the mixture and fed it in a trough.

O. S. Gilbert of Grundy Center, Iowa, thought breeders should raise more feed and buy less. He had been raising a mixture of wheat and oats sown in the proportions of one bushel each and raised eighty to ninety bushels per acre. He thought it better and cheaper than bought feed.

Having exhausted all phases of the subject, Dr. J. H. McNeill of the Iowa state college at Ames, was introduced and delivered his address on "The Influence of Proper Sanitary Conditions in the Prevention of Swine Diseases."

THE INFLUENCE OF PROPER SANITARY CONDITIONS IN THE PREVENTION OF SWINE DISEASES.

J. H. MCNEILL, AMES, IOWA.

Sanitary science is the study of the causes of disease and the influences which affect the operation of these causes favorably and unfavorably and embraces a wide range of subjects which can be dealt with in this paper only as they pertain to the conditions which operate unfavorably and predisposes to certain of the more common and fatal diseases of swine, both of an infectious and non-infectious nature.

We have discovered that curative medicine plays but an unimportant part in the eradication of animal plagues, but that hygiene and preventive medicines are vastly more important, and have wielded a greater influence than all the ills and potions given since the days of Adam.

The study of the causation of disease is ever advancing into hitherto unexplored fields, and one can imagine that within the period of only a few years many new and important discoveries will have been made which are not now considered within practical solution even by the most optimistic dreamer.

We no longer believe that disease is of supernatural origin, and the most of us at least do not follow the teachings of the soothsayers and priests, nor make idolotrous prayers and sacrifices when we are called upon to check the spread of an infectious disease, but on the contrary we get very busy with our coal-tar disinfectants and institute a general cleaning up.

In the early Christian ages the sign of the cross was burned upon the heads of infected or exposed animals in the hope of curing the one and preventing the illness of the others. In the middle of the 19th century, processions of Greek and Turkish priests walked barefoot through the streets of Constantinople, uttering loud peals of deliverance from the scourge that prevailed while the air was heavy and almost unbearable with the odors from the putrifying matters that filled the streets.

The adoption of the principles of sanitary science for the protection of our herds and flocks has been very slow as compared to the advances made in the improvement along the lines of breeding. Nothing permanent is gained in raising a fine lot of animals and then by neglect allowing them to become infected and die from some preventable infectious disease. Why not pay some attention to the few principles that underlie this important subject, and not all to selection, pedigree and performance of the individuals.

We have been twenty centuries in reaching the present condition of sanitary intelligence, but even at this day some of the most important and simple sanitary measures are neglected by intelligent people, or when applied to animals are opposed for financial reasons. It is a significant fact that every attempt made on the part of sanitarians to prevent the spread of diseases among animals in this country has met with the greatest opposition among the owners of these animals. I am led to believe that it is the immediate financial losses that cause this opposition, and in nearly every case we may expect a yearly visitation of the divesting plague and have perpetually exemplified the painful results of a penny wise and pound foolish policy. How much better would it be if so many of us were not so blind and could see that it was more economical to isolate, treat or destroy all animals diseased than to permit them to remain as disturbing centers from which the disease may be spread.

The causes of disease are simple or complicated, a single factor may not in itself be sufficient to cause disease, but may, if associated with another which would have been innocuous if acting alone.

We classify causes into predisposing and exciting. Predisposing causes are such as induce a condition of the system or particular organ, or group of organs, which renders them especially susceptible to disease. This may be characteristic of the race or genus of the animal, or hereditary influences, previous disease in a tissue or organ leaves for the time an impairment of structure which may become an essential predisposing cause.

Exciting causes are the immediate factors in the causation of particular diseases. Heat, if excessive and prolonged, exerts a direct influence on the animal economy, and may become the direct cause of a number of diseases. Cold is equally detrimental and when proper housing is not provided for swine, chilling may take place, and pneumonia or pleurisy result. This is especially true where large numbers are kept together instead of having pens properly protected and large enough to hold twelve or fifteen animals.

The condition of the atmosphere, when charged with offensive gases or the emenation from manure pits or other foul places, is often a direct cause of disease. The emenations from manure pits are believed to be healthy, even by some educated persons, probably it is the ammonia that reminds them of smelling salts. The vitiated air reduces the resistance of the body tissues by inducing a state in which the natural defences are weakened, and an avenue for infection established. Foul air and overcrowding are the prime factors in the production of disease, and it may be truly said that "disease and health are in the direct proportion of foul air and pure air."

Darkness always deteriorates the general health and makes it possible to have corners and other places for the accumulation of filth. Light is invigorating, and it is also detrimental to the growth of germs.

Hog cholera, swine plague, anthrax and tuberculosis of the infectious diseases and various other parasitic affections of the digestive and respiratory system may be transmitted through the medium of streams. It is not an easy matter to indicate the impurities of water which produce disease, aside from the use of very hard water, or one holding in suspension large quantities of mud and filth. These act mechanically on the digestive canal, and their results are easy of comprehension. Impure water is not conducive to good health, and anything which detracts from this in the highest obtainable degree is rendering the animal more prone to suffer from disease.

The object of hygiene is to secure the greatest degrees of bodily health and vigor, because the animal will develop better and is less liable to contract disease. The water trough, the puddle, shallow and polluted well in the feed lot are the chief sources of infection, although disease germs may be carried along the course of streams from infected farms.

The parasitic diseases so common in the domesticated animals and which cause such losses in young animals are largely spread by water. The ingestion of impure water contaminated by sewage has been condemned as a prolific cause of abortion, but it is now known that unless it carries the specific organism which enters from without, it cannot be considered as a cause of this disease.

The results of recent experiments prove that contagious abortion in cows is more readily transmitted through the contamination of food by uterine exudate than any other means. Cows fed on contaminated fetal cotyledons or uterine exudate will abort. The disease may be transmitted to sows and for this reason, if for none other, hogs should not be fed on the afterbirth or dead fetus of a cow that has aborted from any cause. A circumstance not to be forgotten is that a cow that has calved a full term may nevertheless sometimes furnish a vaginal discharge that is infective and therefore dangerous.

Parasitic Diseases.—Two divisions are made of parasitic diseases, animals and vegetable. All vegetable parasites are fungi, and the animal belongs to the invertebrates. Parasites are further divided according as they live upon or within the body of the host.

The part played by these organisms was for a long time not understood, some of them, because of their small size, as the trichina spiralis and mange mite escaped detection.

The gravity of the attack from any one of the species of parasites depends on the relative amount of injury caused by the individual parasite, and the number of which the host may be assailed. Thus the necessity of keeping the hog sheds clean to minimize the chances of infesting the occupants.

The cystic disease of the pig is caused by consuming human excreta or food contaminated by the same. Thus the better observance of sanitary precautions in the human population. The thorough cooking of suspected beef and pork will remedy this condition as far as man is concerned.

Some parasites like the trichina spiralis and the echino-coccus cysts are so likely to undergo a constant increase in the same locality in future years, that their presence can only be looked upon as a growing menace, and should be exterminated at any cost. If a parasite must pass through a host in order to arrive at maturity, it will be necessary to determine what this host is, and institute measures to prevent the animal coming in contact with, either the host or infecting material which may be thrown off.

Most parasitisms can be dealt with by changing the condition of the environment, thus cutting off the next generation of the parasitic organism, this injunction is very generally ignored, and will not in the end exterminate the infectious principle, the thing so much desired in the extermination of the infesting agent. In general we may say that each kind of domestic animal has its parasites, and these may be found only in or on this animal, and do not thrive in or on different species or soon leave them.

The propagation of parasitic disease is subordinate to the condition of the existence of the parasites. The excremental contents of the intestinal canal contain the eggs deposited by the worms living within the canal. The parasites of the respiratory system are expelled by coughing, and fragments or even entire worms may be thrown out, disintegrate and yield the ova or eggs, to external agents. The majority of these are destroyed by drying and many of them may have to remain for months or even years before they can reach the body of the new host, sometimes it may be the ovum itself, and at other times the hatched embryo.

The length of time the embryo is confined in the egg varies with the different species. The ova of certain parasites do not develop if they are kept in a moist medium, while others on the contrary die when they are placed in a dry medium. The thickness of the shell enveloping the ova may be very thin or thick and resistant, and in the first case the ova usually hatch in the surrounding media, and infection takes place by the embryo. While on the other hand the eggs possessing a thick shell pass into the digestive canal of the host, where hatching takes place. When the embryo is thus liberated it either remains in the digestive tract or passes directly, or through the circulation, to the particular tissue or organ which favors its future development.

Parasites may be transmitted from an infested animal to a healthy animal, either by immediate contract, or some intermediate bearer. Certain predisposing conditions favor the propagation of parasites, and few of them are common to several species of animals. Young animals with delicate and non-resistant tissues favor the development of certain parasites, old animals are less able to defend themselves from attacks, and the contraction and secretion of the digestive organs are less capable of expelling the organisms which may be found within.

The multiplication of parasites may be favored or hindered by the state of surroundings. Crowding and dirty habitations aid in the propagation of parasites, the different seasons of the year have a direct influence, and this is especially noticeable in animals affected with mange and lice.

Parasites have a varying influence on the health of their host. Autopsies performed on animals showing every sign of health may reveal the presence of large numbers of parasites in the intestines. The damage done by parasites is not so much due to the blood abstracted as to the effect of the bite or sting, and at other times, as with the mange parasites, the nutrition of the skin is interfered with, and consequently the general health, and if the parasite infest the ear we may have serious nervous disturbances. The intestinal parasites usually exert their deleterious effect by mechanically obstructing the intestines, and at times impairing digestion, and in extreme cases causing perforation or rupture of the organ.

Parasites living in the stomach and intestines are nourished by the more or less modified alimentary matters contained in these organs. All the others derive their sustenance from the substance of their host. The majority of the parasites derive the materials for their development and maintenance from the morbid products they excite the secretion of. Those having a digestive apparatus infest these materials while others take them through the skin.

Of the external parasites of hogs, perhaps the one most commonly met with is the hog louse, known as the Haematopinus suis. This is a large louse, the female sometimes attaining the length of a quarter of an inch. They have a long rather narrow head, and the mouth is fitted for sucking. These lice are found mostly behind the ears, about the root of the tail and in the wrinkles of the skin, although when they become numerous they may be seen anywhere along the back. They cause great irritation to the host, because of the fact that they pierce the skin with their mouth parts many times each day in their efforts to secure the blood of the host. The free use of some one of the good dips will destroy these parasites.

The mite or parasite which causes mange or scabies of hogs is quite frequently met with, and it is of great economic importance, because when a drove of swine becomes affected with mange they are very much reduced in vitality, and the financial loss is sometimes quite great. The parasite known as sarcoptes scabei is quite small, although it is the largest variety of its species, the female being only about 1-45 of an inch in length and about 1-70 of an inch in width. It is quite difficult to locate owing to the fact that it burrows into the skin, and it is only by removng the scab, scraping the skin below it clear down to the quick, and then examining the scrapings with a hand lens, that it is possible to determine definitely the presence of the parasite.

The condition is at first manifested by a violent itching and inflammation of the skin, seemingly first on the head. especially on the ears and around the eyes. It then spreads to the withers, croup and inner surface of the thighs, and later it invades the entire surface of the body. The presence of this parasite in the skin excites the secretion of a morbid fluid-like substance, which, together with the abundant amount of epidermic cells, from the dry whitish-gray crusts so characteristic of sarcoptic mange. The skin beomes wrinkled, and the bristles are usually shed, and become glued together into small tufts which lie on the skin and fall off after a time.

Scabies is transmitted from hog to hog either by direct contact, or through the medium of the bedding in which the hogs sleep. The disease travels slowly, but will in time, unless vigorous means of eradication is instituted, spread to the entire herd. Thorough and frequent dipping or, in bad cases, the application of turpentine eight parts and flour of sulphur one part gives good results.

Of the internal parasites of hogs the trichina spiralis is a very important one, as it is the cause of the disease known as trichinosis, and which disease may be readily transmitted to man through the eating of the flesh from animals affected with the parasite.

The parasite (trichina spiralis) is, in case of the female, about an eighth of an inch long and quite slender. The male is only about a sixteenth of an inch long. In the adult stage they always live in the intestines, and it is the larval form which lodges in the muscles, there becoming encysted and remaining until the flesh is eaten by some other animal. The parasite is always transmitted from one animal to another by ingestion, either of infected flesh or of excremetitious matter, in which are the sexualized parasites or their embryos. Most frequently pigs are infected by eating the bodies of rats or mice which have been feeding upon the feces or scraps of meat of infected pigs. It is thus seen that a very important factor in the eradication of trichinosis is the extermination of the rodents.

Unless a large quantity of trichina are taken into the system there is not much to be seen in the line of symptoms, in fact what symptoms are manifested are not at all characteristic, as they are analogous to those manifested in simple enteritis or peritonitis. If the infection is extensive however there is great muscular pain manfested, the limbs, especially the posterior, are stiff and movements are halting and uncertain.

Pigs will nearly always gradually recover and although they continually carry in their muscles the encysted trichinae, this fact does not seem to interfere with their quality to lay on fat; in fact, they may fatten to an extreme degree.

The parasitic affection of the bronchi and lungs is not uncommon in young and growing pigs, although almost unknown in the adult animal. It is caused by a very fine worm known as the strongylus paradoxus. The parasite is white or brownish in color. The male is from one-half to three-quarters of an inch and the female from one to one and one-fourth of an inch in length. They produce their young through the medium of eggs. The development of the parasite is probably similar to the one that causes lung disease in sheep. The eggs may be thrown out with mucous, and if they pass into water or moist earth they may remain in a dormant condition for months. Under certain favorable conditions the embryos, if dried up after moulting, can be preserved for a long time and revivified when again subjected to moisture. This is important as explaining the destructive actions of these parasites in dry seasons, or in and around the dry and dusty pens and feed lots, as it is then possible for the worm to enter the body in dust by inhalation, although the infestation usually takes place through the medium of vegetation, earth or water.

In preventing this disease two things must be kept in mind. First, to prevent the worms from gaining access to the system, and, second, to keep the pigs in a condition unfavorable to the destructive work of the parasite. The most important of the prophylactic measures under the first division is to prevent the animals from drinking the polluted water in infested ponds or mud holes, and contaminated food where the pens and feed lots have not been properly cleaned. If they are watered from a flowing stream, fence out all but the part where they drink, and this should be where there is a decided current, and do not water from shallow wells that receive surface drainage. Change of pens or pasture for the young pigs is advisable. Constant access to salt is a means of destroying the young worms as they are taken in, or the animals may be fed liberal quantities of salt, copperas and wood ashes. The medicinal treatment does not give satisfactory results except in so far as it prevents the introduction of viable embryos.

Of the parasites that affect the intestines, besides the ones already named, the echinorrhynchus gigas (or thorn headed worm) and the ascaris suilla are the most important. In the mature form the echinorrhynchus infests the small intestines, particularly the duodenum. It may be found free or fixed to the mucous membrane. Because of its presence there is considerable irritation and the perforation of the intestinal wall may occur in some cases. There is scarcely ever found more than five or six of these worms in the intestines. Their presence means a serious loss not only to the breeder, but also to the packer because of the damage done to the intestine which is used in the manufacture of sausage casings.

The male of this species is from two to three and the female from seven to eleven inches long. The ova are laid in the intestine of the pig and afterwards escape with the bowel discharges. They are then swallowed by the larval form of the May beetle. It seems probable that the larval stage may be passed through in a number of invertebrates which are in turn devoured by the pig and the larva set free, and then developes into an adult worm. The symptoms are those of other intestinal worms, and little can be done in the way of treatment. By way of prevention in infected localities pigs should be shut up and their discharges burned or saturated with mercuric chloride solution to destroy the embryos as soon as hatched, and in this way the cycle of development is broken because the pig will find no invertebrate which harbor the larvae.

The common round worm, known scientifically as the ascaris suille, inhabits the small intestines, the male being about six inches and the female about ten inches in length. The body is white, firm and pointed at both ends. They are usually found in pigs out of condition and vary in numbers from 10 to 20 for each individual. When these parasites are present in small numbers they do little harm, but when pigs are kept continuously in the same pen, or when they drink water that has drained from other pens or sheds they often appear in great numbers, produce serious intestinal disorders, vomiting, emaciation, obstruction of the bowels and a watery diarrhoea. The treatment includes both preventive and curative. Under the rules for prevention we consider the sanitary condition under which the pigs are kept. Water should not be used from a shallow or contaminated well. Clean feeding floors and watering troughs should be provided, and wallow holes should not be allowed to form in the yards. One of the simple forms of treatment consists in giving turpentine in milk, about one teaspoonful to a pig weighing one hundred pounds. This should be given on an empty stomach, and two or three doses several hours apart.

The mode of reproduction is in fact one of the principal factors that determines the condition under which parasitism shall take place. Sometimes complete evolution of a species only requires one host, sometimes it demands two, successive and, in general specifically different hosts.

Much interest is centered on the study of parasites because of the danger of infesting man. From our knowledge of the modes of infestation we know that animals can be rendered absolutely safe from the attacks of parasites, but in order to accomplish this we must enforce cleanliness and various other sanitary measures, and see that they get pure air to breathe, water to drink and food to eat.

In dealing with the parasites that infest the skin, the animals attacked should be isolated and the place where they occupy thoroughly disinfected, and where possible boiling water should be used for this purpose, and in taking precautions against some of the parasites we should keep away the host. Following the use of vermicides all the parasites that have been expelled should be carefully collected and destroyed, by fire or boiling water, and above all they should not be thrown on dung heaps or any place where rain may carry them into the watering places and thus reinfest the same individuals or carry embryos to some member of the drove not infested.

Of the diseases due to infection or, in other words, germ diseases, we will mention among the most important tuberculosis, necrotic stomatitis or sore mouth in pigs, and hog cholera and swine plague.

Tuberculosis in hogs occasions great losses to the swine breeders and packers. Infection usually takes place through the medium of milk coming from cattle suffering from tuberculosis, and one of the most fertile sources of this infection lies in the separator milk coming from creameries where the milk has not been sterilized before being returned to the farm. Infection may take place through the medium of the digestive tract (which is the common port of entrance to the hog) from its eating the dung of cattle suffering from intestinal tuberculosis, of those having a bad form of tubercular broncho pneumonia, and it is quite possible that small pigs may be infected by the milk of a tubercular mother, and especially is this true when mammary tuberculosis exists. Infection may take place from the udder or teats of the mother which has been contaminated by excreta from tuberculous cattle.

The prophylactic measures recommended for the eradication of this disease among swine are, first, sterilization of all creamery milk that is used for feed, and, secondly, to prevent the hogs from running with infected or suspected cattle, and as there is no means by which we can determine when cattle or their feces become dangerous to the health of persons or animals, every cow should be tested with tuberculin and the disease eradicated from the herd. The result of recent experiments indicates that the frequency with which milk contains tubercle bacilli is greatly underestimated, especially when it is milked in the ordinary way from tuberculous cows with normal udders or from healthy cows kept in a tuberculous environment.

Necrotic Stomatitis is a very virulent acute specific inflammation of the mouth affecting pigs. It is characterized by the production of general constitutional toxic symptoms, and locally by the formation of ulcers. The necrotic process attacks the skin around the mouth and eyes, and may gain entrance through the small wounds made on the lips or face by the other pigs of the litter when they are nursing the mother. The portion of the mouth usually involved is the region of the small tusks. The lips are usually dry, crack and large areas of skin may necrose and drop out. In some of the worst cases the process may extend to the eyes and cause total blindness. When pigs are kept up too long after farrowing in a small close dry pen, the toes, tail and ears may necrose and drop off as a result of infection with this necrosis bacillus. The best way to deal with this disease lies in disinfection, and keeping the pens and lots in a good sanitary condition, which consists in the removal of all litter from the sleeping pens, the fencing of all hog wallows and the cleaning and disinfection of the lots.

Regarding hog cholera and swine plague, very little can be added to what has for some time been known regarding these two very fatal diseases of swine, except that some advance has been made by the United States department of agriculture in the production of a serum, but this is not yet established on a practical basis. Many so-called hog cholera cures are upon the market, but it is a waste of time and money to fool with them, as they have no virtue whatever. The only sensible way to deal with this very important question is to quarantine, destroy the affected and exposed animals and compensate the owner for his loss.

The increasing sale of quack remedies brought about through the means of mendacious advertisements should be condemned. There is no mystery in connection with drugs and no omniscence in relation to disease.

The public has acquired a notion that each disease has a specific cure and that something in a bottle or box is necessary and will probably be efficient.

What may be in the bottle or box is to them quite immaterial so long as some printed assurance is given with it, and this simple faith in advertised preparations will probably exist as long as men have little scientific education and blindly act on the suggestions of others no better informed than themselves.

There is but one way to combat diseases and that is the absolute destruction of the germs. We may close our eyes to the facts and say that there is nothing in it, but if we persist in being blind we will eventually find ourselves buried under an avalanche of public opinion and hopelessly lost to the advancement that is constantly being made.

Through the educating influences of the press the lay mind is being steeped in the thoughts of our best men, and I would urge that more facts be presented along the lines of preventive medicine instead of whole columns being devoted to the discussion of subjects that the trained scientist cannot after years of patient toil solve to his satisfaction, and not until the lay mind is educated to this point shall we see the hazy dawn of a brilliant future for our live stock breeders.

Responding to an inquiry on the question of the proper modes of prevention of the spread of infectious diseases, the doctor said. "The only remedy is in sanitation. What we advise is to thoroughly disinfect the places, take out the floors if they can be removed. If it is a cement floor that is all the better. Use some good coal tar disinfectant. About coal tar disinfectants—I am not here to contend or recommend but I have my preferences. If you buy coal tar disinfectants from a reliable firm you are all right, from men who make a business of it and have some financial backing and some honor. Usually in attempting to disinfect we remove everything that will hold germs. If the wood is rotten or there is a lot of dirt on the floors that should be removed. By removing all this material, raking it up and burning it and then going over the ground with the disinfectant with a spray pump and using lime and then white-washing after you have disinfected, we think that is all you can do. Don't think that once disinfecting lasts forever. Keep doing it. It is a good habit to disinfect from time to time. You will keep away all diseases and prevent them by using this method. If your pigs become affected with scabies or any of the minor skin affections make a small dip tank, or if that is too much expense, simply catch the pigs and take some disinfectant and a scrub brush and clean up their faces and heads. Get all the matter away and then paint them with a little iodine. That helps to disinfect. This should be done from time to time.

At this point a somewhat scattered discussion of the presence of tuberculosis in cattle took place but as it brought out no new facts and is only indirect in its bearing upon the hog industry, it is omitted from this report.

The evening session opened with a paper by R. S. Johnson of Columbus Junction, on The Iowa State Fair and Its Object: the Duties and Privileges of Exhibitors. Mr. Johnston is superintendent of the swine department of the Iowa state fair.

THE IOWA STATE FAIR AND EXPOSITION AND ITS OBJECT; THE DUTIES AND PRIVILEGES OF EXHIBITORS.

R. S. JOHNSON, COLUMBUS JUNCTION, IOWA.

I think you will agree with me that our secretary has elected a big subject for us to fire at. But one satisfaction is that we can dodge around a good deal without getting off the subject. To my mind there are four distinct subjects under the above headings, which we divided as follows: The Iowa State Fair, Its Object, the Duties of Exhibitors, and the Privileges of Exhibitors.

Lack of time has prevented me from giving the subject the careful consideration I would like. While I will have all the exhibitors of the Iowa State Fair in mind, I shall have those in the swine department particularly in view.

Preparations are now being made for the holding of the fifty-third annual State Fair. Never in its history was there so many improvements under way in one year as at the present time. Something over one hundred thousand dollars will be expended in permanent improvements this year. Of this amount seventy-five thousand dollars was granted by the last Iowa legislature for the swine building, and nearly six thousand dollars by the same legislature for the purchase of ground upon which the swine building is being erected. The balance that is being expended is the surplus of the fair itself, which will amount to perhaps thirty thousand dollars. In addition to this the fair will have its fifteen thousand dollars surplus fund which will not be used.

A complete system of water works has been purchased and is now installed, the same to connect with the city mains. This not only insures an ample supply of water during the fair, but is a great protection in case of fire during the year.

The contract has been let for an additional electric light plant, which will be a vast improvement. One of a series of large horse barns will also be built this year.

A slight review of the early history of the Iowa state fair might be interesting in the way of comparison.

The first fair was held in Fairfield in October, 1854. The first premium list numbered something over four hundred items and offered $1,100.00 in premiums. For comparison we will give the report of the swine department of the first fair fifty-three years ago:

"Class No. 15 was occupied by swine of all classes. There were eleven entries, and the board regrets that the display was so meagre in point of numbers. It is to be regretted that the farmers who have choice breeds or fine animals do not exhibit a stronger disposition to bring them to our fairs for examination and comparison. One difficulty is found in the trouble of moving them and the injury to the animals themselves, but the greater importance of improvement in swine should outweigh all minor considerations. The raising of swine is a source of immense revenue to the farmers of Iowa and no effort should be neglected to produce fine stock of this kind."

No one will deny the truthfulness of the above statement, and the appeal to show at the state fair has certainly been answered when last year over two hundred different herds were on exhibition at the fair, containing in round numbers nearly three thousand head.

As is well known, the Iowa state fair was on wheels for a time, later being held at Keokuk, then Cedar Rapids, and then at Des Moines on the west side, and was moved from there to its present location. It has been nearly twenty-five years since I first attended the Iowa state fair on the west side. At that time it was more nearly like our best county or district fairs of today. However, in the last few years it has advanced by leaps and bounds, until at the present time it is the greatest fair and exposition in the United States, especially in live stock and agricultural products.

The object of the Iowa state fair has as its fundamental principle the education of the people. Many an exhibitor views the fair merely as a market place or as a means of winning a little prize money. Hundreds of fair goers see only a frolic in the event. These people being blind, see not; but thinking men who keep their eyes and the avenues to their brains open, understand that education of the farm folk is the underlying idea of the agricultural fair. The state fair is as much an educational factor for the farmer and breeder as is the agricultural college. As an educational force the state fair is as properly the subject of state aid as any other educational factor which deals with the enlightenment of the farmer and breeder. A serious mistake in the management of state affairs has been the temporary appearance of its buildings. While the actual use

Looking north on Rock Island avenue at the Iowa State Fair and Exposition grounds. Swine barn on the right and stock pavilion in the distance.

of these buildings is but a short time each year, yet they should be permanently constructed and of fire-proof material. Practically all fair managements are now adopting the above plan.

That the object of the Iowa state fair is the improvement of our stock and agricultural products we believe to be true, for in no other way would Iowa ever have achieved the high standard upon which she now rests. It is generally conceded that in no place in the world can such a swine show be seen as we annually find at the Iowa state fair, both as to numbers and quality. It has been a very interesting subject with me, both to study the exhibit and the exhibitor. I have had a young breeder suggest to me that his stock looked pretty good to him at home, but when he got to the show ring he was outclassed. I suppose some give up in disgust and quit, but most of them go home resolved to do better next year, and often in one year's time they are able to produce a prize winner.

The object of all fairs and expositions should be self-supporting except in the building of permanent fire-proof buildings. It should be the endeavor of the management to offer as liberal premiums as possible and to give the people the best entertainment possible. The exhibits in all departments should be of the best. The show in every way should be of a clean, moral character, a place where we can take our families in absolute safety. Such I believe the Iowa state fair to be. There we should find the finest type of the various breeds of horses, cattle, swine and sheep; the best of manufactured products and the best of agricultural products. It is said that "Of all that is good Iowa affords the best." I believe this to be true. I also believe that the cream of what Iowa raises and produces can be found at the Iowa state fair. May its object be ever thus.

I believe it to be the duty of exhibitors to bring nothing but worthy exhibits to the fair. There has been a little tendency in the swine department, among a few exhibitors, to bring inferior animals, with the sole idea of making sales at a price below good stuff. This, to my mind, should be discouraged among breeders.

It is the duty of exhibitors to properly prepare their exhibits before starting for the fair, and to bring nothing but meritorious animals. The start from home should be made in plenty of time to get to the grounds and in quarters by Saturday evening before the fair opens. Entries of all stock should be made with the secretary by letter before leaving home. Likewise pens should be arranged for in the same way.

It is the duty of the exhibitor to keep his exhibit in the best of shape, as well as the surroundings near him, all during the fair. Thousands of visitors will pass his quarters during the week, and it is human to admire seeing a neat and clean exhibit. He should be prompt in having his exhibit in the ring when they are being judged. During the day there should constantly be an attendant at or near the exhibit.

I believe it is the duty of exhibitors to follow the rules and instructions as laid down by the fair management. These rules are made for the best interests of all concerned. I consider it the duty of the superintendent and his assistants to look carefully after the wants and welfare of the exhibitor.

Of the two hundred swine exhibitors who come annually to the Iowa state fair, I consider them a fine representative body of men and I assure you that it has been a pleasure for me to serve as superintendent of the department.

I am glad to inform you at this time that the swine department is about to move into its new home; a home that will be a credit to this great industry. The securing of this grand new home has been a hard pull, one which took the combined efforts of all interested and I wish at this time to thank all who aided in the work. It would seem that there must be a new era dawning for those who exhibit swine at the Iowa state fair.

And now a few words on the privileges of exhibitors. I suppose it is the privilege of all exhibitors to kick; yet I believe the kick of the kicker availeth little. I am also glad to say that kicks are scarce among the swine men; yet there are a few among you.

I imagine the reason I was asked to speak of the privileges of exhibitors was because there were so few of them in the old quarters, under the extremely cramped conditions, that many thought there were no privileges.

There has been a rule in use for some time giving old exhibitors a right to the pens previously occupied by them. This would seem fair and just, as the exhibitor who comes regularly to the fair, year after year, and helps to support it, is entitled to some consideration. However, it semed feasible this year to treat all as new exhibitors and assign them locations in the order in which they paid for pens. This was done under the direction of the executive committee, and all old exhibitors have been so notified in a letter from Secretary Simpson.

It is the privilege of the exhibitor to have such information furnished him as he may wish as regards the department in which he is showing. He also has the privilege of disposing of his stock to the best advantage possible. We would deem it his duty to boost the fair, for he must remember that it is the fair that brings him the buyer. Again we come to the inferior sale stuff. The fair management from a financial point of view cannot furnish even the old pens at $1.00 each. The strong feature of the fair is the improvement of live stock; if nothing but sale stuff was brought to the fair we would retrograde. To some extent the management feels a privilege is being abused.

When the proper standard is reached wherein there will be nothing but the highest type of animal brought to the fair, pen rent, in my opinion, should not be charged.

A few words as regards exhibitors tickets. The ticket problem has given more trouble in the swine department than any other thing. Perhaps there may have been too much leniency under the old rule in the past. The ticket problem is a serious one with all fair managements. However, the present plans as adopted are proving reasonably satisfactory. The exhibitor should not ask the superintendent to break the rules or expect him to do something he cannot do. At the bottom of page 7 in the premium list you will find these words: "No pass out checks issued." That is the plan adopted and no superintendent can vary from that rule. Each superintendent is charged with every ticket he receives and his ticket account checked over. The exhibitors and helpers' tickets are good at the gate after nine p. m. without being taken up, and there is a pass ticket good until 10 a. m. These are the only pass out tickets issued and we aim to be as liberal with them as business would seem to justify.

Mr. Johnston's paper did not call out any discussions but Secretary Simpson was called upon and in his remarks gave some interesting figures on the new swine pens and show pavilion. An architect's blue print showing the ground plans of the building was presented. It shows that there are 1154 pens, size 6x7 feet, and that there is an increase of two thousand square feet of floor space over the pen room in the old buildings. This it is estimated, will have a capacity for more than 3000 hogs. The new swine building is in the form of three sides of a hollow square. The total length east and west is 522 feet. Its width north and south 356 feet and its width throughout 107 feet. The aisles are twelve feet in width, and these are so arranged that there is plenty of room in all directions and every facility to avoid a congestion of crowds in any particular part. The pens are arranged in three double rows and two single rows running lengthwise of the building. The outside of these pens will be perforated steel, giving strength and perfect ventilation with as little possible obstruction to the view as can be had. The pen partitions or divisions will be of wood of course. This building will be of brick and steel with the exception of the roof. The outside walls to be a height of four feet are of brick. Between the top of the brick wall and the roof is a clear open space of ten feet, the roof being supported by steel columns. This will afford splendid ventilation at all times and avoid the possibility of foul air or disagreeable smells in so far as that question can be disposed of. The ground space in this building covers three acres. In addition, an excellent show pavillion has been provided. This is built in the center of the square and is practically inside the show pens although under a separate roof. It is 113 feet wide and 200 feet in length and has sufficient ground space to show even the largest rings. This building is constructed in the same substantial manner as the other.

These new swine buildings on the Iowa state fair grounds are the largest, most substantial and most conveniently arranged of any like accommodations at any of the state fairs of the country. The plans on which they were constructed were formulated after personal inspection of the buildings in use at all the great fairs and with the particular intent to avoid any and all of the weak points there shown. While the state legislature made an appropriation last winter for $75,000 for this building, the lowest contractors bid ran up to $93,000. In order therefore, to keep within the limits of the available money, the board were obliged to, for the present, eliminate the cement floor and one or two other features which the plans provide for, with the intent of completing them in these particulars another year.

The plans for the accommodation of the exhibitors have been considered at every point. On the east of the building a strip of ground has been reserved for camping purposes which will accommodate perhaps seventy-five tents. These are on land which will not be subject to overflow as was the case on the old location and which will be as comfortable as on the higher lands up above.

The swine breeders of Iowa and particularly the exhibitors at the Iowa state fair should feel very kindly toward the board of agriculture in providing this splendid building and equipment for their convenience.

The published programme provided for a paper by George S. Prine of Oskaloosa, Iowa, on the subject, ''Relative Value of Spring and Fall Litters.'' Mr. Prine, however, was not present and failed to make any provision. J. A. Benson of Primghar, Iowa, followed with his paper, discussing, ''Which is Most Detrimental to the Business, the Breeder Who Undersells or the Boomer and High Seller?''

WHICH IS THE MOST DETRIMENTAL TO THE BUSINESS—THE BREEDER WHO UNDERSELLS OR THE BOOMER AND HIGH-SELLERS.

J. A. BENSON, PRIMGHAR, IOWA.

The subject assigned to me for discussion with you is not new nor more pressing today than at many times before in the life of this association, but perhaps the remunerative prices of pork and good breeding stock this year give opportunity to bring home to the beginner, or he who undersells, the detriment of the breeder who brings discredit to his breed and to the painstaking fellows by selling too low and thus showing a loss from his stock even in good times.

It is a proper subject for discussion at your hands as the leaders of the greatest industry of the leading state, both in numbers and individual value of its swine, to save those who are awakening to the progress now being made with pure-bred swine and those who are to follow you, from the financial and moral relapse which follows surely and relentlessly the boomer if not the high-seller.

I know that none of the gentlemen suggested by my subject are present, for the first named class invariably reply to the invitation of your officers, as to the advertising man or the neighbor who wants them to join a circuit of public sales, that "I can't afford it."

The last named gentlemen prefer to operate upon those not so well informed as to the values, or the blessings of delivering full and satisfactory values in every sale, for the man who understands fairly well the business in which we are engaged will balance the value and importance of the blood and breeding productiveness to be secured with the animal offered, or sought to be sold to him, with the ability he has to place other animals with it and develop and sell the product at a profit.

When these items are properly balanced no sale can be a boom sale and who can say when the price is too high?

I come to these meetings each year for the direction and guidance to be obtained from my peers always present, for the inspiration and enthusiasm gleaned from an interchange of experience, and for the moral support always found in the meetings and about the halls of the Iowa State Swine Breeders' association. I come for the help I am certain to get and I cannot but feel that this association is charged with responsibilities along the lines indicated that cannot be overestimated in far reaching effect on the business, and those whom we fondly hope may take your places and continue this organization faithful in the few things and master of many greater problems.

I trust that in this discussion, for which I must have been selected because what I do not know about the last part of the subject is so much greater than what I do know, I shall have your liberal help, remembering our responsibilities to those whose opportunities and temptations are yet mostly before them. I assure you that rumors numerous and elusive of the things I do not know about boom sales confirms me in the belief that I shall have the advantage of a tremendous fund of mystery from which to build theories.

To make my thought clearly understood I wish to put in a class distinctly recognized each one of the gentlemen named in the subject, first the lagging, indifferent, timid or disheartened breeder who undersells; second, the nervous, prancing or plunging boomer, and third, the high-seller who has high breeding, high class intelligence and training with the disposition to do his best, with a proper sense of responsibility and pride, who can properly measure the influence of small things and placing a high value on his animals also make them prove they are worth it. This last breeder can sell very high perhaps, even higher than any prices yet reported and still not be a boomer.

There are many more of the first named but his operations are hampered by his confines of personal acquaintance, by his limitations of capital and running expenses, as often by parsimony as poverty, and by the lack of attractiveness which low priced articles always have for the buyer who wishes to sell his products at a profit.

The buyer of breeding swine who builds up the business is the man who aspires to produce better results in his own herd by good care and development and sees the need of the best live stock his circumstances will profitably use and who looks forward to the profit as well as the pleasure to come from his purchase and his own efforts with it If pleasure should be a part of our lives then we should take pleasure in the success of our industry as well as our amusements. The power to give pleasure is everywhere made a proper object for expenditure. We buy pictures to please the eye, we insist in buying the piano that the case shall be beautiful to look upon. It is regarded necessary for the high priced carriage horse to be a "good looker" and part of the intrinsic value of either one of these is the power to please the eye. Just so the power to please the eye is a proper quality of every pure bred animal and should be given a value in every appraisement.

Most of the men who undersell do not place much value on this fleeting, immeasurable quality which must always depend something on the eye as agent for pleasure. The man who can get no pleasure from pure bred swine through his eyes will never be a successful breeder nor will he build up the business as a buyer unless forced to pay a profit to the breeder by some one who does value this power to please the eye. The man who never gets away from the pound and the price per pound in buying or selling breeding animals will always undersell and be a drawback to progressive breeders.

Another breeder who undersells is he who sees things at a distance with more or less enchantment and his own stock though good, shows all its defects to him, and he cannot properly balance its good qualities against its weaknesses hence offers his stock at prices which leave him no profit and make unjust competition for other breeders. For him such a meeting as this and tomorrow's scoring exercises should return large profit by helping him to measure with judgment what never can be measured with tape line or scales.

I do not include with the breeders who undersell those who sell inferior, runty or ill-fed stock at low prices, for usually the stock is worth less than its selling price and libels its ancestry.

However, the breeder who sells well grown and well bred swine without legitimate profit, to the buyer who gets from it a great profit under usual conditions has been a detriment to the business not only by causing the loss of the proper profit but by making it appear to his family and his neighbors that it does not pay to keep pure bred stock. I contend that the average breeder of swine should so conduct his business that he can sell his product on the market at meat prices and show a good profit on the cost of production up to the point of selling them for breeders.

The man who pays a good price for a sire, thereby to enable him to sell the product to his fellow breeders for more money because of its reputation gained either from its ancestry or its winnings, should charge the increased outlay to "advertising or sale expenses" and see to it that the buyer pays for it when the product is sold. If money is expended for exhibiting or other advertising, it is for selling expense and should be so placed as to carry to the buyer enhanced value. The buyer gets value and his full money's worth when he pays an increased price for the properly advertised animal. The winner is worth more than before he won, even though he will get no better pigs. Those who undersell usually overlook this and having a high-class product they rely upon too small a market to buy it at its worth.

The better the product the more urgent the demand among those who buy, but the fewer the proportionate number who feel able to pay the higher price it commands. Hence, the wisdom of going out with reliable information to a wider field for buyers who can appreciate and pay for our product.

The boomer man of mystery, who is he? How shall we know him? I looked for him in the dictionary but did not find him; he is too elusive to be chained down with words, but one of the things he is supposed to do is to boom "to make a hollow sound, roar, cry." I do not know that I can make you understand how to know him for I do not always know him myself, but he is about the opposite of him who measures everything by the pound or tape line, or by the head or dozen. He details mostly those qualities which only judgment can measure and the age, weight, color and often the pedigrees of his pigs are so beautifully indefinite that two buyers at different times could never by comparing notes tell whether they were offered the same thing. They are mere tribles not worth delivering to the buyer. To me the boomer makes a hollow sound when he is setting out the merits of his stock for sale, but he usually has the quintessence of the business "the pure blood" of the greatest individuals of the breed" as a basis for a value which must be above that which under favorable circumstances (not impossible ones), his animals would show a profit upon. That is a reasonable measure of a price. If the stock sold will show a profit under favorable but not impossible circumstances then it is a legitimate sale if made without fraud and the price states in the usual measures of value.

Many sales have been properly made to persons who had not the equipment to make use of the purchase under favorable circumstances and have shown a loss. Jealous breeders have made use of it to prove that any price above what they are willing or able to pay is a boom price. Some prices are made with such qualifications to the terms of sale that they can have no comparative value with a complete sale. It is not entirely fair to call these boom sales though it seems to me they can have no excuse except to get advertising without paying money for it. The seller and the buyer usually in such sales make the price the leading statement as though it were an excellence of the animal rather than an agreement of the parties. The detriment to come from these sales of "things heard of but not seen' is not only the financial loss to the buyer but the loss of moral strength incident to the sale, which seems either a losing purchase or a mysterious transaction. When a buyer announces an unusual price and the purchase when inspected does not exhibit qualities comparative to the price, when the pens, the care, the advertising are not in keeping with such a high-priced animal and the promised exhibit of the sure winner does not materialize it would seem that the purchase had been boomed.

If anyone has been induced to buy upon the recommendation of that price any of the get or kin of the purchase in question that he would not have bought with a full knowledge of the animal without the price announced or with the true price given then he has probably been victimized by the boomer. But the boomer is not always on the selling side; oh no, the buyer wishes to make it appear that he has put forth unusual effort to improve his stock over his fellows and is not able or perhaps willing, to pay the price for which truly good animals are selling. He searches for something whose breeding is from the same sources as the outstanding animal widely known, that because of its lack of favor with sire or dam or both has not received an equal share of their estates and by inferior development is not worth so much money. If he has had success in development of ill-fed animals before he may honestly believe he can by painstaking care bring it out into a good animal but if he should publish the actual price he paid those to whom he wishes to sell without seeing the animal would feel sure it must be an inferior one and thus look elsewhere, so he arranges with the seller no more scrupulous, to publish a price (sometimes five times the true price), that will indicate a measure of great merit. He is even more detriment to the business than the high-selling boomer. It may be that these boomers are a safety valve on the business by keeping among the breeds enough really inferior animals so that there will always be need of improvement that comes only from the painstaking and intelligent development of the product of the best breeding animals, but like the hog cholera, they multiply the loss. I believe that the integrity of the breeder is a most valuable asset and should be guarded most carefully in business as much as in religion and that his advertising like his pedigrees should be beyond question. Any announcement of the price made by him or his customer will be recognized as advertising.

As in athletics, we should have clean methods of advertising. Building a reputation takes time and expense of energy, intelligence, stick-to-it-iveness and usually a good deal of money besides; it will be based upon our actions and professions, the real comfort and the profit of it will come after years of effort and expense. Each year's advertising of a good business carefully and honestly conducted works on through life and he who has advertised any given amount each year and lived up to his advertising for fifteen years is getting about fifteen times as much results now as at the start. By advertising do not understand me to confine the term to the use of printer's ink only, though you may limit this last statement to that if you please and it will be found about correct. But I mean that when a boom price has gone on record that by its very nature it is always assailable and sooner or later, usually sooner, it is nailed in plain sight to those who can read it, and that advertisement always remains labeled "Visited the herd and found it not up to the advertising."

The boomer is a detriment to breed and breeders to a great extent by keeping inferior animals in the herds but mostly in his effect on our standing in the court of inquiry for pigs. Boom sales are hard to conduct, buyers always feel it and often really meritorious animals sell below farmers' prices because they fear a boom wherever a high price is announced. Many honest breeders pass up a good animal of popular family just because someone has "boomed" the family, but a high price for a really meritorious animal should not be even mentioned as "boomed" unless other evidence very clear is shown.

Confidence in our breeders is a fundamental basis of our business and the boomer who destroys confidence takes that which can do him no good but leaves us poor indeed.

I would absolve the high seller who has taken the best animals and brought out in them by painstaking care and intelligence the high development which makes them outstanding. He should not be coupled with the boomer if he sells honestly and announces his prices honestly. Let us have more of him and of the men who can pay high prices and go home with their purchases and take care of them as they deserve, multiply their kind and make them pay out. Always we need the high seller to set a mark of excellence in achievement and prove that it pays to excel but he should win by honest effort and methods and announce his successes rather by the merit of his contributions to the breed than by his advertising to create an unhealthy demand for stock by spurious argument or promise.

The boomer makes a hollow sound when he is buying and selling, roars when he is measured by good judgment, and you hear his cry when he is called to make good his representations or his notes. His business is sure to relapse and all who mingle with him are besmirched.

Mr. Benson seemed to cover his subject so thoroughly that no one was inclined to take it up further and J. R. Harding of Macedonia, Iowa, gave his methods of Care and Treatment of a Crop of Pigs for the Greatest Profit.

CARE AND TREATMENT OF A CROP OF PIGS FOR THE GREATEST PROFIT.

J. R. HARDING, MACEDONIA, IOWA.

I was asked to write a paper on care and treating of a crop of pigs for the greatest profit. As I am a breeder of pure bred hogs I suppose that the intention was to treat on that class of swine, but I shall give my experience both in feeding for pork and for the development of breeding stock.

My method in detail is this: The first thing is to select the sows that are to be used in producing the crop of pigs. Great care should be taken to select sows that show vigorous constitutions; sows that are a strong type of the breed we are engaged in raising. I prefer a lengthy, deep bodied sow, with a head not too broad, one which might be termed slim, as they prove better mothers than those with broad masculine heads. Then mate these sows to males that are especially strong where these sows might be weak. The practice of breeding one male to the entire herd of sows regardless of their fitness is too common among the average swine raisers for the general market, and there is a great loss in the future development of the crop of pigs as the direct result of this mismating of sire and dam. I find there is a great difference in the development of young pigs if the dam is fed on bone and muscle making foods instead of fat reducing food. I consider that if a sow is fed right during the period from breeding until farrowing time, it means one-fourth in the future development, as pigs from sows fed as I have stated are stronger and will grow faster and have more vitality than the pigs from equally as good a sire and dam on an exclusive corn diet.

At farrowing time, great care should be taken to provide dry, clean saparate quarters for each sow and if the weather is cold the bedding should be changed every twenty-four hours after she farrows, as damp bedding in cold weather will chill the little fellows, which is the cause of most of the bowel trouble so common in young pigs.

One week before farrowing I would feed sow on moist bran and one ear of corn morning and evening with just a little oil meal in each feed. I would give nothing but cold water for the first twenty-four hours after farrowing and then a little feed of bran. For the first three weeks feed light. Watch your sows and increase the feed gradually, giving a little more corn as the pigs grow. At three weeks old the sow should be on full feed with one-half of her feed corn or corn meal to keep up flesh.

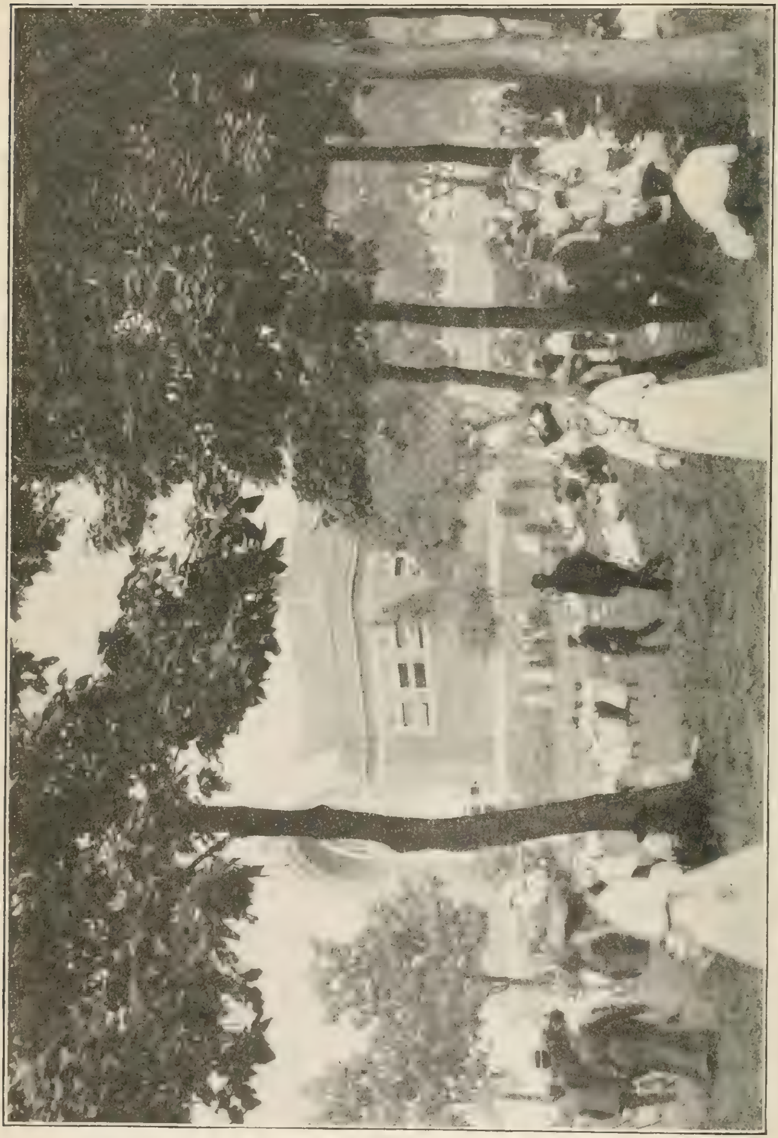
One of the most essential things for the well being and thrift of a crop of young pigs is plenty of sunshine and exercise. If the sunshine is lacking, the exercise is all the more necessary and if not exercised all kinds of trouble may be expected. Thumps is one of the worst of all ailments in the pig kingdom, but can generally be avoided if the little fellows are forced to exercise freely every day at three weeks old. Provide a separate feeding place for them and feed them soaked oats. After they commence eating well, mix corn meal, shorts, bran, oil meal and alfalfa. Mix thoroughly and place in feeder where the little fellows can have free access to it. Have a trough that the pigs can drink at, separate from their dam. If you have milk, give them a liberal allowance. If not, clean water with the above ration will give excellent results. As the pigs grow, if you are feeding for the market, increase the corn from one-fifth to one-half and the last month feed three parts corn, keeping up the other feeds, only reducing them as you increase the corn. By this method I produced a carload of hogs that averaged 300 pounds at 10 months of age and topped the Chicago market with 40,000 on sale. This is the most successful method I have tried and it has yielded the greatest profit. The only difference in feeding for breeding stock or pork production is the amount of corn fed, using less corn for breeding stock and plenty of grass for both.

Mr. Harding's talk again stirred up considerable interest. Mr. Ausman questioned the advisability of giving a sow cold water to drink soon after farrowing, saying that he had been as careful not to do so as he had been to avoid heavy feeding at that time. H. C. Strater of Monroe, Iowa, said he would not give cold water for a week after farrowing and, that if the weather was cold he thought water pumped from the well or spring was about right. Alonzo Baker of Colo, Iowa, said: "I don't know as I have anything to say but I don't see the object of feeding a sow right up to the time of farrowing and just as quick as she farrows give her a different feed altogether and warm water. I have had a sow go out in the cornfield where she did not have soft feed or any care and eat and drink to suit herself. I don't know whether she made a hog of herself or not but she did come up with a litter of nice, smooth, thrifty pigs, better than any you ever raised with all your care.'' Mr. Harding said a sow should not be slopped heavily before farrowing, but if the sow had been receiving a heavy slop before farrowing, it should be continued afterwards. If however, slop had not been used before, bad results as a rule would follow, commencing afterward.

Mr. Harding, being criticised for expressing his preference for a slim-headed brood sow justified his judgment by saying: ''The best pig I raise every year is from just the type of sow I have described. Did you ever see an outstanding winner that was the product of a sow with a big masculine head? The point with me is to obtain the best mother, and the masculine headed sow has not been the one.'' He did mean the sharp nosed, peaked kind, but one of the slim type. Mr. Swallow said he got his show pigs by mating a coarse sow with a fine headed male with quality and finish. Mr. McTavish, who breds Berkshires, said that with his breed he had secured better results from sows that were quite wide between the eyes, than from the narrow faced ones.

W. G. Tittsworth of Avoca, Iowa, who in the words of Artemus Ward, proved himself ''an amusin' little cuss,'' in his humorous way got very close to the question and threw the lime light on the coarse hog-fine hog controversy. Among other things he said: ''I would just like to ask what the term coarse sow means. Is it a long, thin sow that might be smooth in her hips and shoulders, or is it a large, broad backed, rough looking sow? You talk about fine hogs, small hogs, big hogs and medium hogs. I have had some of all sizes and kinds and was not satisfied with any of them. Some were too small, some too course, some too fine some too big. I have asked Mr. Swallow a dozen times just what the medium was and never could get it out of him. The gentleman both seem to like that sow with the long head and the long neck, but I don't know which one it means. I have had sows that ate twenty-five ears of corn at once——you needn't laugh at me, I fed it to them—and they were not coarse, either. In one way a man might say they were, but their hips were no wider. I don't want it understood I like a fine boned hog at all, but I don't know what the coarse one is—the one they are speaking about. I know what a coarse steer is in the market, but this hog has got me rattled. Mr. Swallow says he bought a hog that cost $100 and that is just my kind. Now that shows that he means to make light of my kind. He has driven out a pretty good hog into the ring and looked at me and said, ''That is your kind, Billy,'' when he knew all the time he would not get a premium. You may think I am just trying to make fun, but it is not so. I have both kinds at home. Of course I have my idea and my notion about the sow and what she ought to be, but I don't know what the others mean by a coarse sow. Is it big boned, or can it be smooth in hips and shoulders, etc., or long and thin, or deep up and down? I am a hog breeder and come here for the purpose of learning something that will make me breed better hogs than I ever did before, partly because I would like to beat the other fellow and partly because I realize the importance of the hog when you think of the difference it would make if every hog would be worth ten cents more, and it could be easily worth fifty cents more. It would mean more money than I am likely to make while I am down here. I am not a talker. I have tried it and it won't work. But when I come here I come to learn and I can't do it if the men don't talk plain They are afraid to talk straight truth because some other man might not like it. I have gone to the scoring a good many times and sat around on boxes and whittled and thought I would give a hundred dollars if I knew just what a real good hog was. It seemed to me the fellows as much as said, "Well, come on boys and let's get away from here as soon as possible." And I didn't know much more when we got through than I did before, so I never tried to score. I attended the school and tried to learn by lessons, but you would not talk. This meeting is a school of the world, not for us individually but for everybody, first Iowa, then the United States, then the world. This is just a little piece of my mind as I see it. I don't know for sure about anything and tomorrow when we go over there to the scoring I hope there will be a man that will make people see and think, not one that pretends to know and see and teach people. The fee for a judge at the state fair ought to be a couple of hundred dollars. He can teach several million people a great deal in each twelve months. We can learn which is the best hog if he will go at it right."

The annual business meeting, at which is transacted such business as may come up and at which the election of officers takes place, is held on Wednesday evening of the Iowa state fair week. The June meetings are devoted solely to the discussion of matters of interest to the members.



Scene in the park at the Iowa State Fair and Exposition grounds, 1907.

PART VII.

PROCEEDINGS

OF THE

THIRTY-FIRST ANNUAL CONVENTION

OF THE

IOWA STATE DAIRY ASSOCIATION

HELD AT DES MOINES, IOWA,

November 20, 21, 22, 1907

OFFICERS.

W. B. BARNEY, President	*Hampton*
L. S. EDWARDS, Vice President	*Arlington*
W. B. JOHNSON, Secretary	*Des Moines*
F. M. BROWN, Treasurer	*Cedar Rapids*

The Iowa Dairy association met in its thirty-first annual convention at Des Moines, and was called to order eWdnesday evening, November 20, 1907, at 7:30 o'clock, President W. B. Barney, in the chair.

ADDRESS OF WELCOME.

H. R. WRIGHT, DES MOINES.

Mr. Chairman, Ladies and Gentlemen:—I have discovered that when anyone falls down in this association I am called upon. Now I have not the slightest thing to say in the line of an address of welcome. The mayor has gone to a wedding but in view of what we know about his family I judge it is not his own wedding.

The village of Des Moines, as you know, is a little out of the dairy belt. About the only real bona fide dairyman I know of in this town, besides myself, is my friend Mr. Wallace, who publishes a farm and dairy paper. The fact is the business men and the people of this city, with whom your officers have had to deal, have dealt very liberally with this association and I judge from that that they are mighty glad to have you come or they would not have put up the money to bring you here. The absence of the mayor is unavoidable, I know, on his part, and the welcome the city will give you the next two or three days is not indicated by his unavoidable absence this evening.

RESPONSE TO ADDRESS OF WELCOME.

HON. BYRON NEWBERRY, STRAWBERRY POINT, IOWA.

Mr. President, Ladies and Gentlemen:—I appreciate the honor of being called upon to respond to the generous welcome to the Iowa State Dairy association, assembled here in its thirty-first annual convention.

No city within the borders of our commonwealth is as well equipped to entertain conventions, or so accessible to all the people as Des Moines. The people of Iowa appreciate the fact that Des Moines is a goodly city to sojourn in even for a brief period and are proud of its recognized position in many ways as the metropolis of the state. We admire your motto "Des Moines does things." We appreciate your kindly greetings and we sincerely trust your city will continue to "do things" for the best interests of its people and the welfare of the state.

I wish to congratulate the good people of this city, that you have assembled here, for the first time, I am told, the representatives of the great dairy interests of the state, each one of whom knows when his bread is butter side up, and who have always advocated the principle of a "square deal," that whosoever in our broad land calls for butter to spread upon the right side of his bread, and has the price, is entitled to expect pure, wholesome butter and not a substitute of unknown quality of unwholesomeness.

The members of this association, the dairyman, the creameryman, the buttermaker, the traffic solicitor, the commission man, the farmer, one and all are loyal subjects, while the people from the oldest inhabitants to the youngest child are the dependent subjects of that great and generous sovereign, the old cow, the queen of the prairies.

But few appreciate the extent and importance of the dairy interests of Iowa. According to the auditor's report, there are 1,418,017 cows in the state with an assessed valuation of $31,989,011. This valuation is only about $22.50 each. The actual value of the cows is now doubtless $40,000,000. I am reminded by our excellent dairy commissioner that for the year ending July 1st last, there were 101,011 creamery patrons. The creameries received the cream from 700,000 cows. There were nearly 75,000 hand separators in operation, and the output of the creameries the past year in round numbers is 90,000,000 pounds of butter, while the estimated amount of butter made on the farms and outside the creameries is 65,000,000 pounds, making a total of butter produced in the state of 155,000,000,000 pounds. Any reason why our bread should not be buttered—on one side, at least?

We are surely living in a land overflowing with milk and butter. The local value of the buter produced during the year at twenty-five cents per pound, amounts to $38,750,000, to which should be added $5,000,000 as the value of the by-products, and $300,000 the value of the cheese produced, making a vast total of over $44,000,000 as the yearly revenue to the people of the state from the dairy interests.

The butter exported from the state annually is approximately 100,000,000 pounds, having a net cash value to the dairy farmer and creamery patrons of $25,000,000. And this is substantially net profit. Go with me through the dairy sections of the state and you will find that the farmers who milks his cows has just as many hogs, just as many calves, just as much of farm products as his neighbor similarly situated, but does not milk his cows. The man who milks has his butter extra, and to the creamery patrons this means $25,000,000 net. Quite a substantial amount of pocket money, isn't it? Surely, a safer business proposition than speculating in copper and other stocks in Wall street.

Numerous, just and wise laws have been enacted to protect the dairy interests. The national and state laws pertaining to oleomargarine have proven a great protection. These measures were enacted only through the diligent and persistent efforts of those staunch friends of the dairy who strenuously insisted that the imitations and substitutes should be sold under their true name and character, and that the element of fraud should be eliminated in the sale and traffic of dairy products. Under recent legislation, both state and national, we have this principle extended so as to include all food products.

Dairy legislation in the near future will doubtless be along the lines of sanitation on the farm and in the creamery. That cleanliness is an important element of wholesomeness must be impressed and enforced, if need be by the strong arm of the law, on every one connected with the production of milk and butter. The element of cleanliness is not always apparent on the farm or even in the creamery. Our friend, Professor McKay, truly says: "It is just as necessary to have a law regarding cleanliness in milk and cream as it is to have a law regulating cleanliness in the packing houses."

No food product is used to the extent or of such recognized importance as milk. It is a perfect and a dependent food for the young child and an important factor in the diet of the older persons. When a child asks for milk, is he not entitled to a pure wholesome article? Shall he be given a life sustainer or a life destroyer? The supply of pure, wholesome milk to our people in both city and country is of vital importance.

Perhaps I may be pardoned for referring, at this time, to one of the menaces to public health that is attracting general attention, and that is the increase of tuberculosis in cattle and swine. Authorities claim that fully two per cent of cattle slaughtered are afflicted with the disease and that the increase the past six years of the disease in swine is over 800 per cent. It is conceded that bovine tuberculosis may be transmitted to swine either by feeding unpasteurized skimmed milk, by access to the droppings of tuberculous cattle or eating the carcasses of cattle that were afflicted with the disease.

Veterinarians and packers claim that tuberculosis in swine is found in the dairy sections to a much greater extent than elsewhere, doubtless owing to more milk being fed to young swine. Doctor Koto, our state veterinarian, states that he has been furnished, the past year, by the packers and the National Bureau of Animal Industry, a list of shippers in the state, who have placed on the market a large number of tuberculous swine, and that in a majority of instances, where an investigation was made, he could trace the disease, among swine, to tuberculous cattle. The Thirty-first General Assembly passed a law requiring every owner or operator of a creamery to pasteurize all skimmed milk at a temperature of 185 degrees Fahreinheit. Incidentally, the skimmed milk so treated would be in better condition to feed; but the primary object of the law is to prevent the spread of tuberculosis in swine and calves fed such milk. The full compliance of this wise law would be of inestimable value to the farmers of the state in restricting tuberculosis in swine and among cattle. The tuberculin test is conceded by all authorities to be a satisfactory, speedy, safe and cheap method of ascertaining the presence of tuberculosis in cattle. We now have a state law requiring registered cattle shipped into the state for breeding or dairy purposs to be so tested. Is there any logical reason why milch cows and dairy herds should not be subjected to this test and all animals found by the test to be diseased be branded and kept isolated and their sale prohibited, except for slaughter purposes under state or federal inspection; and the sale or use of milk from such animals prohibited? Perhaps it might be deemed advisable to pay the owner of animals slaughtered the difference between the beef value and the carcas value, in case the animal is condemned under federal inspection in the slaughter test. All authorities now claim that bovine tuberculosis may be transmitted to human beings, largely through the consumption of milk from diseased cows, but the tubercle bacilli are said not to thrive to any great extent in butter; but I aprehend that we would all prefer our butter made from pure, wholesome milk or from pasteurized cream.

Cities and towns no doubt now have the power, as a regulation of public health, to require all animals within their limits to be subjected to the tuberculin test and all diseased animals quarantined, and all milk offered for sale inspected, but this power is seldom invoked. A general statue based on the high plane of the protection of the public health and the promotion of the general welfare of the people requiring all dairy herds of the state to be subjected to the tuberculin test and the animals found diseased to be branded and quarantined, with the right to the owner of selling them for slaughter purposes only, under state or federal inspection, and, if deemed advisable, payment made by the state of the difference between the beef value and the carcas value, in case the animal is condemned in the slaughter test, would seem to be the only real solution of bovine tuberculosis.

The National Department of Agriculture is lending its powerful influence to restrict and stamp out the disease; surely, the state of Iowa should do its full part. With bovine tuberculosis overcome, the disease in swine would soon be eradicated, while the ravishes of the great "white plague" that is a pall over many of our homes, would be greatly curtailed. Iowa has always been a progressive state. The excellent work of the dairy department of the agricultural college and the able and efficient service of the dairy commissioner and his capable deputy and assistants and the painstaking labor of her skilful buttermakers are responsible to a great extent in maintaining Iowa in the forefront as a dairy state. May Iowa's dairy interests be continually enlarged and improved; and may this convention prove of great interest and profit to all friends of the dairy.

THE CHAIRMAN: We will now listen to the report of the secretary, Mr. W. B. Johnson.

SECRETARY'S REPORT OF THE IOWA STATE DAIRY ASSOCIATION.

W. B. JOHNSON, SECRETARY, DES MOINES.

July 1st, balance in treasury	$1,179.83	
Checks held up	7.35	
January 1st, 1907—		
Contributions to date	735.00	
Advertising to date	215.00	
Membership to date	208.00	
Western passenger agent	17.00	
Butter sales	909.62	
Interest on deposits	21.00	
Overdraft on pro rata	10.28	
Expense as per items		$ 923.04
Premiums paid pro rata		992.25
For overweight on butter		27.47
Overdraft returned		10.28
Balance in hands of treasurer		1,350.04
Total	$3,303.08	$3,303.08

THE CHAIRMAN: We will now have the report of our treasurer, Mr. Frank M. Brown.

TREASURER'S REPORT, IOWA STATE DAIRY ASSOCIATION.

F. M. BROWN, TREASURER.

Expenses Iowa State Dairyman's Association:

W. B. Barney	$ 8.40
S. B. Shilling	9.60
F. M. Brown	10.00
Western Passenger Association	17.00
Exchange on checks	.20
Jorgensen & Anderson	50.00
American Express Co.	18.11
American Express Co.	12.75
United States Express Co.	42.79
United States Express Co.	1.38

Expense machinery hall	12.65	
G. L. McKay, hotel expense	3.00	
S. B. Shillin, traveling expense, Cedar Rapids	6.68	
W. B. Johnson, postage	26.00	
Jules Lombard	11.00	
Miss McGoorty, expense	17.50	
J. W. Leasure, carpenter work	15.00	
Huston Printing Co.	12.00	
W. B. Barney, expense	6.40	
Expense labor, butter hall	15.29	
Expense, meeting, Waterloo	5.74	
Express charges on badges.	.70	
L. McKinnon	6.50	
Exchange on checks	.30	
Western Passenger Association	51.25	
Calder Van and Storage Co.	5.25	
W. B. Johnson, pro rata fund.	1,030.00	
Fred L. Kimball estate, printing program	185.20	
International Silverware Co.	23.90	
Georghty & Co., badges	60.00	
H. G. Van Felt, expense, Cedar Rapids	7.30	
J. W. Fraser, expense, Cedar Rapids	24.65	
Engraving, cups, medals and boxing same	4.20	
Miss McGoorty, stenographer	75.00	
Loftus Bros., signs	1.00	
W. B. Johnson, salary $150, postage $1.30	151.30	
W. E. Smith, expense, Cedar Rapids	25.00	—$1,953.04

Receipts of Iowa State Dairyman's Association, 1906:

Cash on hand	$1,179.83
Francis D. Moulton Co.	15.00
Jacob Jacobensten	5.00
Northey Refrigerator Co.	10.00
Monarch Refrigerator Co.	10.00
Pettit & Reed	5.00
Lesserman Bros.	10.00
Chris Hanson, laboratory	10.00
Pitt, Barnum Co.	5.00
Edson Bros.	10.00
Johnston & Coughlin	10.00
C. H. Weaver & Co.	10.00
J. B. Ford Co.	20.00
Vermont Farm Machinery Co.	30.00
Jensen Manufacturing Co.	10.00
Fitch Cornell Co.	10.00
Wells, Richardson Co.	10.00
S. B. Friday Co.	5.00
De Laval Separator Co.	40.00
National Creamery Supply Co.	35.00
Chicago Co-Oper. Coal Co.	5.00
S. B. Friday Co., for program	5.00

Exhaust Steam Purifier Co.	5.00	
G. W. Kennedy	5.00	
F. A. Leighton	10.00	
Receipts from sale of memberships	208.00	
W. B. Barney	5.00	
F. W. Steinke	10.00	
Waterloo Cream Separator Co.	5.00	
Sharpless Separator Co.	20.00	
Creamery Package Manfg. Co.	45.00	
J. G. Cherry Company	60.00	
Spurbeck Lambert Co.	15.00	
Montrose Hotel	5.00	
Delevan Hotel	5.00	
Allison Hotel	5.00	
Western Passenger Association	17.00	
Jas. Roland Co., sale of butter	909.62	
Howard Reynolds	10.00	
Wells, Richardson Co.	25.00	
Diamond Crystal Salt Co.	15.00	
Iowa Dairy Separator Co.	35.00	
Miller, Tyson Co.	15.00	
City of Cedar Rapids	300.00	
Fred Bishoff	10.00	
Heller & Merz Co.	10.00	
A. H. Barber Creamery Supply Co.	15.00	
Worcester Salt Co.	15.00	
Empire Cream Separator Co.	25.00	
Balance pro rata fund unused	17.63	
Interest to January 1st	21.00	
A. R. Weims, Brush Co.	10.00	
Total receipts		$3,303.08
Total disbursements		1,953.04
Balance, cash on hand		$1,350.04

THE CHAIRMAN: The next on the rogram, I believe, is appointment of committees. I will appoint the following:

Legislative Committee—Hon. Byron Newberry, Strawberry Point; Prof. G. L. McKay, Ames; W. E. Smith, Des Moines; E. R. Shoemaker, Waterloo; F. R. Leighton, Des Moines; W. B. Barney, Hampton.

Resolution Committee.—Mr. H. J. Neitert, Walker; E. M. Wentworth, State Center; S. B. Shilling, Mason City; J. J. Brunner, Charles City.

Auditing Committee.—Mr. F. W. Mack, Waterloo; A. C. Drysdale, Dubuque; F. W. Stephenson, Lamont.

THE CHAIRMAN: The next is the address of the president.

PRESIDENT'S ADDRESS.

W. B. BARNEY, HAMPTON, IOWA.

This association is made up of successful business men, skilled buttermakers and experienced dairymen.

I cannot hope to instruct you, and shall feel satisfied if I can interest you for a short time. Custom appears to require from your presiding officer a general report of the preceding year; with such recommendations as may be deemed best for the future.

It affords me great pleasure today to congratulate you on this, your thirty-first annual meeting, on the splendid condition of our association. Your treasurer's report shows a larger balance than at any other time in the existence of the association. Your membership has increased so that it is far in advance of that of any other date. This has been accomplished without any financial aid, so much needed, from the State. Other states are aiding their dairy associations as follows: Michigan, $500; Ohio, $850; Indiana, $500; Wisconsin, $3,000; Minnesota, $1,500; Illinois, $1,500.

With a yearly appropriation of $1,500 or $2,000 this association could extend its influence in such a way as to bring returns that would repay our state ten-fold. Our meetings could be held at points where they would do the most good. They would not have to be peddled out as they are now to the cities that can help us in paying our legitimate expenses.

Every man who is interested in dairying or the welfare and progress of our state should make it a point to impress upon our senators and representatives the fact that we are far behind our sister states in this matter, and that it is his duty to see that there is something done at the next meeting of our legislature. Backed by a good appropriation we could hold three or four conventions or meetings in parts of the state where they would be of the most benefit. Much work could be done in conjunction with the extension department and other work at the agricultural college.

Nothing has so much to do with the success of your business as the cow. You will, therefore, pardon me if I give this, man's best friend, considerable attention. Are you sure that you have done your best to secure the greatest producers possible?

From all over the land comes the inquiry for more and better dairy cows. How are you to get them? Prices were never higher and it is only by the introduction of the pure bred dairy sire that they are to be secured. Don't let some one who has a bull to sell lead you to believe that if you will buy of him, should he sire a male calf, it will make a fine beef steer, and, if a heifer, a profitable cow for the dairy. There is a place for all the different breeds, but this sort should have no place in the dairy.

From one railroad station in Wisconsin there has been shipped in the last year $200,000 worth of dairy cows, mostly grades. Many of these cows brought $75 to $100. This the result of the introduction of pure bred dairy sires for the last few years. Will steers pay any better than this even after they are fed? The demand for the dairy cow will not be supplied for some years. The west and southwest are taking them by the carload, while Mexico and Japan are sending their representatives here for our best pure breds and grades of the different dairy breeds. The yearly record of Colantha 4th's Johanna, now drawing to a close, in which she has produced 1,021.66 pounds of butter, 85.7% basis, in ten months and nine days, is another evidence of what a cow, bred for a purpose, is capable of doing, while the records of Yeksa, Sunbeam, Dolly Bloom and Loetta D. are fresh in the minds of all. I would advise, where it is possible to do so, that in introducing pure bred sires a neighborhood agree on some one breed and use sires of this breed. The buyer for your surplus stock is much easier to attract, and the changing of bulls with a neighbor is simplified. The most common error of today is the sending of so many mature sires to the butcher's block and the use of immature bulls.

It is now a well established fact that only the best results in breeding can be obtained by the use of highly developed, mature ancestry on both sides. Of the forty-three stallions that have sired more than one trotter with records of 2:10 or better, all except four were developed stallions with records, and three of the four were known to possess extreme speed and were, in fact, highly developed, although without technical records.

Hereditary traits are handed down for many generations in animals. It is said of the dog, which turns round and round before lying down, that he is simply displaying a tendency he has inherited from his remote ancestry, the wild dog, that made its bed in the tall grass by turning round and round. It takes several generations of breeding to get any trait well established. The Scotch Collie might in years be bred so that he would show much the same tendencies as the hunting dog, but what would be the object when we have in the pointer those traits well established.

Along this same line of reasoning, why should the dairyman take up a breed of cattle that has been bred and reared for generations for the production of beef when he has at least four dairy breeds to make his selections from that have been bred for a purpose and have demonstrated their ability to pay their way and make a profit for their owners.

Care and feed have as much to do with your success as the cow. Do not get the notion that you have finished your task when you have a lot of good cows about you, for you have just made a beginning. Only recently the Iowa cow was producing an average of 140 pounds of butter per cow. Our best authorities say now that we have her up to about 150 pounds, about half what she should produce.

The dairy business in our state is only in its infancy. We little realize its possibilities. The fact that the cow returns to our land a larger per cent of fertility than any other farm animal is sure to make her a strong factor in our economic calculations in the future. The professional grain raiser and soil robber has one friend on whom he has never called in vain—the dairy cow.

At our last annual meeting there was some inclination to find fault with some of our products, especially butter from gathered cream creameries. There were those who intimated that our buttermakers were not as progressive as those of other states. I dislike to admit that this is so, as I believe our boys not so much at fault as their patrons who, by their lax methods, are delivering cream that is far from what it should be.

The buttermaker of today must be something of an educator. The more he knows about the cow and how to feed her the better he is equipped to fill his position.

The very nature of this work will not allow his spending much time with his patrons. A few instructors traveling over the state calling on the dairymen at their homes, giving advice as to the best methods of breeding, feeding, care of stock, and especially the care of the hand separator—if one is in use—would go a long way toward increasing our product and its value. About 100,000,000 pounds of butter have been shipped out of the state in the last year; $25,000,000 worth at 25 cents per pound. If, by better methods in handling the cream the value could be increased one cent per pound, which is not at all impossible, the snug sum of $1,000,000 would be realized, while the improved methods of breeding, feeding and weeding out the poor cows should add as much more, making a net gain of $2,000,000.

The organization of test associations would be of great value in getting rid of the poor cow. We believe that their work among our dairymen will result in great good and profit for all.

An appropriation of $10,000 by our state is none too large for the purpose of co-operating with the local creameries and dairymen in conducting these co-operative test associations. The expenditure of the money should be under the direction of the state.

One of the plans that has been looked on with much favor was that of assessing the creameries a tenth mill to help pay these instructors, who at the same time could act as inspectors. We believe a majority of the creameries were in favor of this plan; if our state would make an appropriation to assist in payment of these expenses. This is a matter worthy of our best thought and consideration. Our laws for the eradication and suppression of tuberculosis are not what they should be. A law permitting the shipping in of untested cattle and allowing the owner to pasture them in a place adjoining those that have been tested is not a just one. Some provision should be made to compensate the owner for cattle condemned by the state.

The National Dairy Show, the National Buttermakers' Association and kindred organizations are entitled to our hearty support. One of the reasons we have not been able to get more at the hands of our lawmakers is a lack of organized effort on our part.

If we will stand by these different organizations and through them make our wants known, we shall be able to accomplish much for the betterment of our condition in the future.

When our association was invited to hold its meeting in this beautiful and thriving city our attention was attracted to you motto, "Des Moines Does Things." What better one could you have adopted? Why should we not make this our watchword? What we hope for is success. Show me a man or organization that does things and does them well and you will not have to look elsewhere for the successful man. Let us keep this in mind for the next year and the Iowa State Dairymen's Association will not regret having held its meeting in the city that "does things."

THE CHAIRMAN: We will now hear from Hon. H. R. Wright.

ADDRESS.

H. R. WRIGHT, DAIRY AND FOOD COMMISSIONER, DES MOINES.

Mr. Chairman, Ladies and Gentlemen:

I suppose that most of you people remember my embarrassment at Cedar Rapids last year. I said I was more or less at a loss to find a proper subject to talk on on an occasion like that, but I reckon tonight I have the right subject to bring before the buttermakers and I am not so very much put out because the people of the city are not here, because the things I intended to say, if I had had the time to put them together, are things best said to you alone.

Those of you who read your bibles, and I hope you all do, will remember that early in the first book of the bible there is a reference made to the product in which we are all interested. There is a story there of how Father Abraham had a very important visitor and, like the rest of us, he put up a good feast for his guest and, while the bill of fare was not given, the one particular thing mentioned that he fed him was butter and the context showed that he produced the butter at that feast because it was a delicacy, a thing which added to the meal which he supplied for his honored guest. If you will read the history of the beginning of other civilized races, you will find similar accounts of the manufacture and use of butter. It is true that the civilized nations of the world are characterized by the manner of their living in particular and in all of those cases the use of butter is one of the things which has become a necessity. So down the history of time, from Abraham to the present, butter has been considered one of the foods that all civilized people have used. Indeed, so much is this true that with us, not only now, but for the last one hundred years, butter has been considered one of the necessities of life—bread and butter—so that we are accustomed to think of having butter at our meals the same as we expect to have anything else to eat.

The developments in the butter industry in the last quarter of a century have given butter a place as a commercial article which it did not have in the early times, did not have until the advent of the creamery system, refrigerator cars and methods of getting it to market and distributing it to the people. But from the beginning of things down to the present time it was supposed that butter was a good article of diet, that it held an honored place in the list of foods which people usually eat and that it was nutritious and that it was wholesome.

You people have heard a good deal about the quality of butter, but the phase of it that I am going to talk about has nothing to do with the question of whether it brings extras or not. We have come to the time when there is an epidemic of talk about our foods and a lot of people have gone nearly crazy about pure foods; there are a few who have slandered the food products of this country and in particular the product which you people make has not escaped the slanders of people whose supposed education and position and ability to be posted are not so great as they might seem to be. You have perhaps recently seen in some newspapers the story that butter is one of the filthiest articles that goes on the table. Perhaps I had better read just what was said:

"Butter is fit only to be the food of scavengers. This is said of most of the butter which is consumed in this country."

The article, which I will not read altogether, proceeds to say that milk is afflicted with germs of tuberculosis and various other germs. When the cream is skimmed from that milk all those germs go into the cream, and when the cream is churned into butter they are all there so that there is an extraordinary number of germs in the butter and hence butter is the filthiest article of food we have. The contrary is the fact. You people know well that you put in the cream germs for the purpose of ripening the cream; you not only accept those that are there, but you add to them, so the statement is true in a sense that there are millions of bacteria in the butter. The mistake that the scientific gentleman made when he wrote the article was to assume that all of us are so ignorant as to fancy that all bacteria must be classed with vermin, parasites, or other undesirable citizens of that kind. The thing you do to cream, when you inoculate it with the proper kind of plant to develop the flavor you desire, is exactly the same as the housewife and bakers do when they mix the bread and add the yeast. When the bread is ready to go into the oven and the butter to come from the churn they are alike, for they are full of bacteria, and if one is filthy so is the other. The trouble is that bacteria is not an element of filth, but rather the contrary.

The learned writer suggests also that butter is the vehicle of germs of tuberculosis and other diseases. It is unfortunately true that a great deal of milk comes from tubercular animals, and not enough has been done in the way of regulating that situation. It is true sometimes these germs get into the butter, but every student in bacteria knows that butter is not a medium in which bacteria can live. Bacteria require nitrogen for their existence, and there is little or no nitrogen in butter, and the scientific fact of the matter is that whereas when butter is churned it is full of lactic acid bacteria, and perhaps a few disease bacteria which may have got in, at the end of two or three days there are almost no live bacteria at all. The fact is the same as it is in regard to the bread. The bread goes into the oven swarming with bacteria, good bacteria, the bacteria of yeast, but the heat destroys them. The butter is manufactured and has in it a tremendous quantity of bacteria, lactic acid bacteria, but the impossibility of their existence there destroys them within a very few days, so that the butter is almost or absolutely sterile. These are facts which bacteriologists have established hundreds of times and it does not require any expert knowledge of the subject to discover this. So that butter, instead of being the most unwholesome article of food, is one of the most wholesome articles of food we have on the market, so you may all go home with a clear conscience and sleep, knowing that you have not shipped any tubercular bacilli to your customers in New York city whereby they will have tuberculosis or anything of the kind. The fact is the butter industry is not only a great thing commercially, but its product is one of the necessities of life, as well as a luxury. It is one of the most easily digested and most completely digested foods, its food value is greater than that of any other food put on the market pound for pound, its actual cost value compared with the price in money is not greater than the price of beef or bread or anything else of food value, so you are not only making and sending to the markets a wholesome product, but you are making and sending to the markets, at any price we have had in the last four years compared to other prices, an article which is about as cheap as anything that anybody buys, and that is the reason why people everywhere, from the time of Abraham down to the present, have estimated butter as a proper and legitimate article of food, have given it an honored place in the dietary of the family and have devoted themseles to its manufacture and sale.

THE CHAIRMAN: We have with us a gentleman that I believe you would all be glad to hear from. In view of the fact that we have this time to spare, I have been requested to call on our former president, Mr. S. B. Shilling, to say a few words to you.

REMARKS BY MR. S. B. SHILLING.

Mr. Chairman, Ladies and Gentlemen:

I declare I do not know what to say to you. I would think, after holding the position as long as I did, you would be tired of listening to me, and another thing I think your president should have appreciated the embarrassment of my position in standing before you without notice and not have called on me to talk to you when I really do not know what I want to go after you for. There are a great many things I shall want to tell you before the convention is over and hope I will have an opportunity to talk to you again.

I have just been talking to Brother Olson, who is a competitor of mine, and he said this was the greatest audience that a first meeting of the Iowa convention ever had, and I believe that is right. I do not think we ever started out with a convention where the prospects were as good and where we had as large and enthusiastic an audience as we have here tonight. I want to congratulate you on that. I had some misgivings about coming to Des Moines because I thought it was almost all politics down here, but it looks as though just at present we had some dairymen, too.

Now I want to say just a word about the matter that was mentioned by your president, that is about the condition of Iowa. You know I have stood before you for the last five years and have begged and pleaded and urged everybody to do something along that line; I have been down here to Des Moines and labored with the legislators until I have been afraid I would be kicked out of town, trying to get that appropriation for our association, and in many instances I did not get even a pleasant look.

I have the same interest in that I have always had, we want the appropriation and we ought to have it, and I do not believe we ought to give up trying to get it. We have Brother Newberry interested in it and I want to say that whenever we wanted anything in the dairy line in the state of Iowa we went to him to get it for us and he has never turned us down, but we have him at our convention for the first time and I hope we can impress him with the value of this association to the dairy industry of Iowa so that he will go to work at the next session, with the help that we can give him, and see if we cannot get that $1,500 we need so badly. We need it and we are all interested in getting it. We need this money and we all know it and it is a surprise to me that the state does not see it and if it were not for the enthusiasm and the energy of the dairymen of Iowa this association would have been dead long ago from lack of support. It is a credit to the dairymen and Iowa that we have been able to keep it up and depend only on our own resources to keep it going. While I do not wish to cast any reflections on any other state, the people from the state where my competitor is located feel awfully proud of their record, but they have ten men going over the state all the time, preaching the doctrine of good dairying and the state furnishes the money for this work. It is the best investment the state of Minnesota every appropriated money for, and the only thing I can feel ashamed of tonight is the fact that the legislators of the state of Iowa cannot see that they are denying assistance to the best industry in the state, an industry that would put more dollars into the pockets of the people of the state than anything else in the state.

THE CHAIRMAN: I am very glad we called on Mr. Shilling, and I do not believe that there is anyone here that will regret it. We have another old war horse with us and, as it is not very late, I will call on Mr. P. H. Kieffer to address us for a few minutes.

MR. KIEFFER: Mr. Chairman, I heartily thank you for this recognition and I can tell you truthfully from the bottom of my heart that I was glad to get onto Iowa soil, glad to meet the boys here tonight. I shall remain with you during the convention and know that I will enjoy it. Everybody looks natural to me and I want to congratulate you upon the large gathering that you have for the first night. I think it is the largest that we have ever had at an Iowa State dairy meeting. I think you have done well and I congratulate you all for being here.

Meeting adjourned until 10 A. M. Thursday.

THURSDAY MORNING SESSION.

Meeting called to order at 10:30 A. M. by President Barney.

THE CHAIRMAN: The first business to be taken up this morning is election of officers. The first office to be filled is that of your president. Nominations are now in order.

MR. SHOEMAKER, Waterloo: I take pleasure in nominating Mr. W. B. Barney to succeed himself as president for the ensuing year.

Nomination seconded. On motion, duly seconded, the rules were suspended and the president was elected by acclamation, Mr. Barney being duly declared elected president of the Iowa Dairy Association for the coming year.

The next officer to be elected is vice president for the next year.

MR. SHILLING: Mr. Chairman, it seems to me that if we were hunting for an excuse, after the glorious convention we are having at this time, to change any of the officers we would be a set of ''chumps.'' I have always voted for the buttermakers' interests in this organization, and the only buttermaker we have on the board of directors is Mr. Edwards, a buttermaker of Arlington, and I wish to place the name of Mr. Edwards in nomination to succeed himself as vice president of the association.

Nomination seconded and on motion, duly seconded, the rules of the association were suspended, and Mr. Edwards was elected vice president of the organization by acclamation.

THE CHAIRMAN: The next officer to be elected is secretary for the ensuing year. Who will you have for your secretary?

MEMBER: I move that Mr. W. B. Johnson be nominated to succeed himself for the ensuing year.

Nomination seconded, and on motion, duly seconded, the rules of the association were suspended and Mr. Johnson was elected by acclamation.

THE CHAIRMAN: Nominations are now in order for your treasurer for the coming year.

MEMBER: Mr. President, I place in nomination the name of Mr. Odell. Nomination seconded.

MR. CLARK: I feel a little the same as our friend Mr. Shilling that as long as we have a tried and true treasurer and the funds have shown that he has taken care of them in good shape, while I am a very good friend of Mr. Odell's, I feel with Mr. Shilling that the old officers have done well for the last year and therefore why not continue them all for another year, and consequently I nominate Mr. F. M. Brown of Cedar Rapids.

Nomination seconded.

MR. ODELL: You do not want to make any change in your present officers. They have done everything possible to assist building up this association and you do not want to make any change at all. I thank you for the compliment but I withdraw my name as a candidate.

On motion, duly seconded, the rules were suspended and Mr. Brown was elected by acclamation to serve as treasurer of the Iowa State Dairy Association for the ensuing year.

THE CHAIRMAN: That completes the election of officers and we will now pass to the next number on our program, an address by Mr. Hugh Van Pelt, Professor of Dairying at Ames. We will now call on Mr. Van Pelt. We are always glad to hear him and I believe we will all profit by what he has to give us.

SILOS AND SILAGE.

PROF. HUGH G. VAN PELT, AMES.

I am glad to speak upon silos and silage at this time because I am sure it means more to the dairy farmer of the great corn belt, of which Iowa is the heart, than most of us have any conception, and in the future the silo will mean more than it has in the past. Commercial food stuffs have been and are advancing rapidly in price. Many by-products valuable as foodstuffs for dairy cattle that a few years ago were cheap are today almost, if not quite, too expensive for the dairy feeder to consider when compiling his rations. The time is present when the farmer must rely more upon his own efforts to produce and preserve upon his own farm those foods that will supply the needs of his dairy herds. He must, in fact, practice intensive farming in the broadest sense. That which in the past was waste will in the future measure to a great extent the profits. And I dare say there is no one thing that could be added to the farm equipment that would promote intensive farming so greatly as a good, well built silo. The silo will make it possible to produce two pounds of milk where one was formerly produced, and in so doing fertilizing constituents will be made available that when returned to the land will increase the yield of grass in the same proportions. These results will be brought about, too, at a less expense than though any other methods of supply feed to the herds were resorted to.

Like any other farm improvement, however, the building of a silo incurs considerable expense, yet it is quite doubtful whether or not any other building can be built that will have such a large capacity for the storage of roughage as will the silo. For instance, let us compare the space required for a ton of hay as compared with a ton of corn silage. It requires, as you are all aware, at least 400 cubic feet of mow room for one ton of hay. For one ton of corn silage 50 cubic feet (one-eighth as much) is required. Therefore eight tons of silage requires only the same storage space as one ton of clover hay, but one ton of clover hay contains 1,680 pounds of dry matter and eight tons of corn silage contains 3,360 pounds of dry matter—just twice as much. Therefore, 200 cubic feet of space in the silo will preserve as much dry matter as 400 cubic feet in the haymow.

Figuring more closely, and comparing the digestible feeding nutrients which indicate more nearly than anything else the value of a foodstuff, we find that one ton of clover hay contains 886 pounds of total digestible nutrients, eight tons of corn silage contains 2,064 pounds. Thus it is that two and one-third times as many digestible feeding nutrients can be stored in the same silo space as in the haymow. Summing up, then, we find that to furnish storage space for feed in substitute of a silo having a capacity of 100 tons of silage, a hay barn with a capacity of 800 tons would be required, or a hay barn having a capacity of 233 tons to store the same amount of digestible feeding nutrients, or a barn with a capacity of 200 tons to store the same amount of dry matter as a silo holding 100 tons of ensilage. Determine the cost of a hay barn with a capacity of from 200 to 233 tons of clover hay, add to this the extra advantage of supplying succulense to the cow's winter ration and the real value of a 100-ton silo readily becomes apparent.

In selecting the site for erecting the silo the following considerations should be kept in mind. First, the silo should not be placed in the barn where the cows are milked nor close to the milk room or the silage odors will be present to contaminate the milk at milking periods. Second, it should be so placed as to be convenient to feed from. To accomplish both these results perhaps no better plan can be practiced than to erect the silo four or five feet from one end of the feeding alley and connected to the barn with a corridor, the door of which closes tightly and prohibits all silage odors from entering the cow barn except at feeding times, which should always occur after milking. A third and less important consideration should be that of adding rather than detracting from the appearance of the farm buildings.

When selecting the silo itself the following points should be considered:

1st. Shape.

2d. It should be of proper size in all dimensions to conform with the size of the herd to be fed from it.

3d. It should be of such a character that it will preserve the silage to best advantage.

4th. It should be built of such quality of material as will make it substantial and long lived.

5th. Its cost should be in reach of the purchaser.

When silos and silage first came into use in this country they were invariably built rectangular or square and shallow. Then it was necessary to weight the silage down to keep it from spoiling. Later it was learned that greater depth would remove the necessity of weighting, but still the silage in the corners would spoil because it could not be packed in tight enough to exclude all air. The next improvement was that of boarding across the corners, making an octagonal interior. This was better, but not yet successful and the idea of the round silo was gained, thus eliminating all corners or air space for silage to spoil and the losses incurred by the air coming in contact with the contents of the silo were reduced to a minimum. Less lumber is required to build a circular silo of a like capacity than a square one and the material need not be so strong to prevent bulging and pulling apart, so that the circular silo is not only the more efficient type, but should be a great deal the cheaper.

For these reasons the circular silo has become much the more popular, until at the present time we seldom see any other form being constructed.

Relative to size, it should not be less than thirty feet deep, because the greater the depth the greater the downward pressure, resulting in a more efficient expulsion of air from between the particles of cut corn; and as the completeness with which the air is excluded determines the keeping quality of the silage, importance of depth is revealed. Further than this, the greater the downward pressure the greater amount of silage can be stored in a cubic foot of space. And equally important is the fact that silage capacity gained in depth rather than in diameter makes it possible for a greater depth of top surface to be fed off daily. Silage exposed to the air for two or three days begins to mould and spoil, and experience teaches us that for satisfactory results from one and one-quarter to three inches, according to climatic conditions, should be fed off of the top each day.

It has been estimated that the feeding surface in the silo should be about five square feet per cow in the herd. Thus, for a herd of 30 cows 150 square feet of feeding surface or a silo 14 feet in diameter will be necessary; 40 cows, 200 square feet, or a diameter of 16 feet; and a herd of 50 cows, 250 square feet, or an inside diameter of 18 feet. Many have made the mistake of building silos with too large a diameter and have experienced a considerable loss from not being able to feed a sufficient amount from the top each day to prevent molding. It should always be kept in mind that better results will be gained from two small silos rather than one extremely large one, providing they are properly filled. The depth necessary for the silo can be readily obtained after determining the proper diameter to permit the feeding of a definite number of inches in depth to each cow. For instance, two inches are to be fed off each day; 180 days feeding would require 360 inches or 30 feet in depth.

In determining the material for the silo, the manner in which the silage will be preserved, the longevity of the silo and the cost should all be considered. For wooden silos it is doubtful whether or not cheaper and at the same time more efficient silos can be made than the commercial stave silo made of Oregon fir or sound northern white pine. Precautions should be taken, however, to demand that the staves be seasoned, free from sap and dead knots. Live knots or those found in staves that have been sawed from live trees are not so objectionable because they remain taut in the wood for many years, and often material containing these can be bought for less money because of their presence. Of late cement silos are attracting considerable attention and undoubtedly they are the coming silo, especially on farms where plenty of good gravel is accessible. In the past their cost, together with the fact that the silage did not keep so well in them as in a wooden silo, has prohibited their use, but with improved construction devices and a knowledge gained of preparing the inner walls the cost will be lessened and methods placed in vogue for preserving the silage to the extent that the length of time which they will last will be a controlling factor and surely they will come into quite general use.

Whether of wood or cement, the silo should rest on a strong foundation set deep enough in the ground to prevent the frost from heaving it out of level. This foundation need not be an expensive affair, however, because it can be put in with common farm help. Two foundations were put in in the following manner last year at the Iowa State College:

Set a stake solidly at the point where it is desired that the center of the silo will be. Tie a rope to the stake and measure out nine inches greater than one-half the diameter that the silo is to be. Hold the rope tight and mark out a circle around the stake. Shorten the rope eighteen inches and mark out another circle in the same manner inside the first one.

These two circles mark the inside and outside of the foundation wall, and by digging a trench straight down between them to the required depth the form for a concrete foundation is provided. But to fill this trench with concrete requires a great amount of cement, incurring great expense, which may be overcome by gathering up the broken rock, stones and old scraps of iron from off the farm and filling the trench half full. Make a thin mixture of one part cement and six parts sand and gravel, pour on top of the rocks and see that every crevice is filled. Sometimes it will be necessary to dash a few pails of water in to make the cement mixture find every opening.

Finish filling the trench with rocks and cement as before, making the top level with cement; and after setting for twenty-four hours there will be a foundation that will stand for an indefinite length of time. Later the inside can be dug out and the dish-shaped bottom of the silo put in, but an experienced cement worker can put this in much smoother than one who has never tried it before.

In the past many crops have been considered for silage purposes, but invariably it has been found that corn is far superior for the purpose. Occasionally of a wet season a crop of clover that might otherwise be lost may be saved by storing it in the form of silage. Again, it is oftentimes advisable in filling the silo with corn to put in one load of clover or cowpeas with two loads of green corn, and in so doing a silage is made that is not only palatable, but also of a quality that conforms more closely to a balanced ration. On the whole, however, especially in the state of Iowa, where corn is the principal crop raised, this product alone will be found most satisfactory in making silage, for several reasons, the main one of which is no doubt the fact that if the corn is not put into the silo, the stalks, which represent a large percentage of the feeding value of the corn, will be wasted, while clover, alfalfa, cowpeas, etc., which might be used for silage, can be stored in a small barn or even in the stack, and as some dry foods are necessary to be fed with silage the advantage of storing these in dry form becomes apparent, because when supplied they furnish both dry matter and protein to the ration—the two constituents which are lacking in corn silage.

Oftentimes I have been asked regarding the merits of green oats as a product for the silo, but it should be remembered that no grass with a hollow stem will make good silage because the air cannot be excluded, and one of the secrets of making good silage is to exclude the air. Sometimes it may be of advantage to drill corn for the specific purpose of making silage, yet it is doubtful whether this should be followed as a rule. It is mostly invariably the case on the Iowa farm that a portion of the corn crop does not mature so early as the remaining portion, and this crop which would otherwise be blighted by frost can be used for filling the silo and thus be of more value than it otherwise would be.

In filling the silo there are many precautions which must be taken into consideration, and it will be found that to make good silage is more difficult than to make good hay. If the corn is cut too green the silage will be very sour, not at all palatable to the cow and more of it will be left uneaten and wasted. If allowed to become too dry before putting into the silo the corn fire fangs around the edges, thus permitting the air to get in, and in this case also a large portion of the silage is wasted—this time because it molds and rots before the cow has a chance to eat it. In addition to this the chemist has found that a very large percentage of the valuable feeding nutrients of a plant is stored up during the first stages of maturity. Silage made from very green corn contains a very large percentage of water and a low feeding value. In view of this fact we find that to make the very best quality of silage there is a certain time to cut the corn. This occurs after the corn is dented and when it begins to glaze. At this time it will be found that two or three of the lower leaves of the cornstalk have begun to turn yellow, and when this stage has been reached operations should be begun and carried on rapidly, for frost is liable to occur at any time, and at best corn matures very quickly after it has once started. In cutting the corn for silage it is well to start the corn harvester or two or three men with corn knives a half day before the silage cutter starts, so that when operations are once begun the cutter may be kept going at the limit of its capacity until the silos are filled. Teams and wagons in great enough number should be provided so that the expensive power will not lay idle at any time, if the silage is to be made in the most economical manner. In former times when the green corn was elevated into the silo by a simple carrier a great amount of power was not necessary, but at the present time with the improved blower which is attached to the silage cutter a considerable amount of power is necessary, and it will be advisable to hire a steam engine from some one in the neighborhood who perhaps used it for threshing purposes in the summer time. If power is lacking the process of filling the silo will be extremely slow. One precaution that should be taken in filling the silo with a blower is to arrange for the cutter to stand so close to the silos that the blower pipe which conveys the corn into the silo would stand as nearly perpendicular as possible. If it slants to any large degree sufficient power cannot be used to blow the heavy green corn into the silo continuously and the blower chokes up, causing endless trouble. After the corn begins to enter the silo there should be at least two men whose duty it is to tromp the silage thoroughly in, especially around the edges and doors of the silo. If the silage is not pressed in very thoroughly the air is permitted to enter in between the particles of green corn and a large portion of the silage is spoiled before feeding time comes.

Here again the advantage of having two silos instead of one becomes apparent. After one silo has been entirely filled the cutter may be moved on to the other and it filled in turn. After a couple of days it will be found that the green corn in the first silo has settled five or six feet and by this time the cutter may be moved back to its former position and the first silo refilled. In this manner, by changing from one silo to the other, the greatest possible capacity of the silo is taken advantage of.

Once the silo is full there is no reason for waiting longer to begin feeding the product, unless it be that the pastures are luxuriant and it is desired that the silage be kept for later winter uses. In this case some precaution should be taken to keep the top layer from decay. This is best accomplished by running some hay, straw or grass through the silage cutter and covering the green corn to a depth of 12 to 18 inches. This top layer should then be thoroughly soaked with water, using 15 or 20 barrels on a silo 18 feet in diameter. This wetting down produces decay and five or six inches of the top layer is readily rotted and seals up the surface in such a manner that the air will not be permitted to enter the lower parts. Unless this decay is very rapid the sealing process does not take place so readily and oftentimes three or four feet of silage is spoiled from the top downward. An additional precaution which may be taken is to sow oats thickly over the top of the silo before the water is placed in it. The heat which is brought about by the decay of the silage and moisture from the water germinates the oats so that they quickly form a dense sod on the top of the silo by their roots and in this way seal up the silo and exclude the air.

In feeding the silage to cows in winter it will be found a very simple task. In the first place the silage is very palatable to the cow after she has cultivated a taste for it, and she eats it very readily. But it is understood by feeders in the corn belt that corn is used too exclusively for the best of results. Silage, like corn, contains a great amount of carbohydrates or fattening materials in proportion to the protein, which is an all important essential in the production of milk. Again, silage contains a very great amount of water and if fed by itself it is necessary for the cow to eat a very great amount of the food in order to obtain for herself a sufficient amount of dry matter. In view of these facts it becomes evident that the cow should be fed other foodstuffs in conjunction with the silage which will not only supply protein to balance up the ration, but also foods that will supply dry matter in sufficient amounts to overcome to an extent the watery nature of the silage.

In the countries where alfalfa hay can be successfully raised there is no better food to feed with silage. We find on one hand the silage is low in dry matter and high in carbohydrates; on the other hand we find alfalfa hay low in carbohydrates and high in dry matter and protein. Fed together in proper proportions these foods make a perfectly balanced ration and it is safe to say that a proportion which would be proper would be to allow the cow to receive all of each of these foods that she will consume. She will thus solve the problem of the balanced ration for herself even better than her feeder can do. For cows that are dry or giving a very small amount of milk no other food is necessary, but for cows that are fresh and yielding a large flow of milk some concentrates should be used, because the alfalfa contains a great amount of indigestible matter, and as before stated, silage contains a great amount of water. Because of this the cow producing a large amount of milk does not receive a sufficiently large amount of actual feeding constituents unless some more concentrated foods are used.

The grain ration which is fed to the cow should be balanced up as well as the roughage. Some corn meal may be used, but in small quantities. A large portion of the ration should be made up of foodstuffs that are rich in protein, such as gluten feed, cottonseed meal, ground oats, middlings, union grains, distillers' grains, malt sprouts, dried brewers' grains, germ meal, shorts, or oil meal. These concentrated foods should be supplied in varying quantities according to the capacity and milk-producing ability of the individual cow under consideration. In many vicinities, however, alfalfa hay cannot be raised, and clover hay which has been properly made may be substituted by feeding a lesser amount of silage and a greater amount of hay. In this section of the country a great deal of timothy hay is used and we oftentimes find it the practice among dairymen to use it in their feeding operations. It should be remembered, however, that timothy hay has a very low feeding value for dairy cows and experiments that have been performed lead us to believe that shredded corn fodder is almost as valuable in producing milk as is timothy hay. On the other hand, timothy hay as a rule commands a high price upon the market and for this reason, where it is possible, it should be sold and the money received expended for alfalfa or clover hay that is rich in protein and can be fed to a great deal better advantage. The main value of either timothy or shredded corn fodder when fed in conjunction with corn silage is to supply dry matter. For the cow that received all the corn silage and clover or alfalfa hay that she can consume needs only a small amount of expensive grain daily, and no doubt this amount would be covered with eight pounds even if she were flush in her milk producing period.

Care should be exercised in the feeding of silage to prohibit contamination of milk. Unless it is used judiciously and in such amounts that all which is fed will be consumed, thus insuring that none of the feed will lie around the barn to mould, decay or impart odors, there will be many disadvantages in its use. Even at the present time milk condensories are prohibiting the use of corn silage in the territory from which they draw their milk supply. This, however, is really not the fault of the silage and it should be borne in mind that it is not the silage that the cow eats that taints the milk, but the silage which is allowed to remain in the barn to contaminate the air, and thus the milk after it has been drawn from the cow, which does the harm. Extreme care should be taken to keep all odors of the silage out of the barn and milk room at milking periods. The cow should be fed silage only after milking times and then care should be taken that no more silage be given the cow than the amount which she will readily clean up, and in case any silage remains in the feed box uneaten the feeder should make it a point to remove this uneaten food before the next milking period. As soon as the milk is drawn from the cow it begins to cool rapidly and during the process of cooling it takes up odors more quickly than at any other time, so that if the air is permeated with the odor of silage it is readily seen that the milk will at once become contaminated and is really unfit for human consumption.

However, if precautions are taken to keep the silage out of the barn at milking times it will be found that there is very little, if any, taint to the milk produced by silage feeding.

Thus far I have spoken to you only of feeding silage during the winter months. However, there is no doubt but what its advantages are equally great for summer months. We seldom have a year but that some time during the summer months the pastures become dry and the cows decline very greatly in their milk flow. It has long since been decided that some soiling crops should be supplied for the cows at this period, but there are many disadvantages in growing soiling crops for feed. In the first place it is very difficult to determine when the drouth and short pastures are to occur and it behooves the feeder to have green food coming on at all times during the summer and much of it cannot be used for the purpose of soiling. Where the summer feed is put into the silo it is ready for use at any period. Again, the summer rains which come make it very disagreeable to harvest the soiling crops, much time is consumed in doing so during the busy season, and furthermore, the soiling crops change much from week to week in the stages of their maturity so that there can be little regularity in feeding these crops to the cows. On the other hand the silage which has been put into the silo the fall before during a less busy season can be fed with ease each day and the quality of the product remains stationary no matter what the climatic conditions may be. In case the season has been so favorable that no soiling crop has been necessary there is no loss, because silage once put into the silo and sealed up from the top will keep from year to year and for an indefinite length of time.

In feeding other farm animals besides dairy cows the silo is equally important. This is especially true in feeding young calves through the winter months because the succulent character of the silage keeps the digestive tract of the animal in most excellent condition, as will be indicated by soft, pliable tough of the hair and hide of the beast. By keeping the digestive apparatus in this excellent condition the calf thrives and grows more rapidly than if it were kept entirely upon dry feed.

Calling to mind the fact that Iowa stands first in the production of butter, and this year second in the production of corn, it becomes evident that the Iowa farm is not complete in its equipment unless it is provided with silos for the purpose of converting the corn into ensilage, which is one of the most productive sources of butter fat.

DISCUSSION.

THE CHAIRMAN: Now, gentlemen, we have a little time before closing and if there is anyone here that would like to ask Prof. Van Pelt a question I am sure he will be glad to answer it. This is a matter I think of great interest to the dairymen of the state of Iowa, a matter that we should give a great deal of consideration and one I believe that should be thoroughly talked over here. Are there any questions for Mr. Van Pelt?

QUESTION: I would like to ask the professor what is his idea in making a silo of extending it down five or six feet in the ground. Would it be better than if the silo was on top of the ground?

MR. VAN PELT: Your question was in regard to digging down into the ground and allowing the silage to be placed in there? There is one disadvantage to that. If the character of the ground is proper it is a very good thing. There is no part of the silo that can be built as cheaply as the part beneath the ground, but there is one thing that needs to be taken into consideration there and that is that the drainage of your ground must be perfect. If the water stand in the ground it is bound to soak through the walls of your silo and ruin the silage beneath the ground. Then, too, if that portion of your silo is so far beneath the ground it is difficult to pitch the silage out in the winter time, but if your silo extends down five or six feet it is all right provided your ground is well drained and no water can soak into the silo.

MR. BAER: Is it not possible to mix the cement and sand so as to exclude moisture from getting through into the silage?

MR. VAN PELT: It is very difficult with that portion of the silo below the ground. The last few years I understand that people having cement silos mix some cement with water making a wash to wash the inside of the silo, and that makes it possible to keep the water out of the silo and the silage will keep well, but my experience has shown it is almost impossible to hold the water out of the silo. I know of one silo in Illinois dug down eight feet below the ground and it was impossible to keep the water out of that silo, so we simply put in a false floor and after that we did not use the part below the ground at all. If we had an outlet by which we could drain the water out from along the silo it would have been all right but that was impossible.

MEMBER: How would you have a wooden silo constructed, stave or frame?

MR. VAN PELT: I think a stave silo is the most economical sort of silo at the present time. They are made by manufacturers who have the machinery with which to make the staves, and when we consider the amount of material necessary for putting up a silo in any other form, as compared with the price of stave silos of good quality, undoubtedly you will find the stave silo is not only more efficient but more economical.

MEMBER: Do you have any treatment on the inside?

Mr. Van Pelt: Paint on the outside like any other frame building; they should be kept well painted on the outside but I doubt whether it is policy to treat the inside with any material. Some firms send out material with which to treat the staves but as a rule the better class of silos are not supposed to be treated with anything, in fact the manufacturers advise not treating them.

Member: What is the approximate cost of a good cement silo?

Mr. Van Pelt: That differs very materially with the locality in which you are located. If you are where you have access to plenty of sand and gravel, the cost would not be nearly so great as though you needed to buy it. However, where the gravel costs a dollar a yard the expense runs up pretty high. For fifteen cows you would need for two hundred forty days feeding seventy-two tons and to contain that much silage you would need a silo 15 feet in diameter and 24 feet deep. It is almost impossible to give figures on the cost of a cement silo, in fact the different cement men will give different prices and they differ greatly, but for a silo of that size, made of cement with gravel at $1.00 a yard, the cost would be between four and five hundred dollars, while the same silo of good stave material could be bought for $300 or probably less.

Question: Is it necessary to have a double layer of cement or a dead air space?

Mr. Van Pelt. No it is not necessary. Probably if there were a dead air space it would be better but it is not necessary. Where the silo is simply built of straight cement and then treated on the inside with cement water it will do as well as with an air space.

Question: How can a silo be kept from blowing over?

Mr. Van Pelt: If your foundation is right there will be no danger of its blowing over; but in case there is, a great many firms send out anchors with guy wires. However, if the silo has the proper diameter in proportion to the heighth I have never known of any trouble with it blowing over.

Member: What do you think about the silo advertised in the Dairy Record, which does away with the wall?

Prof. Van Pelt: We are trying an experiment in making silage in that way at the present time at the college. Undoubtedly there will be more waste for the reason that the outside of the pile of corn will necessarily need to rot off. To those of you who do not understand this method I might say the corn is simply cut and piled up in circular shape in a stack, then rods are placed on top and by a system of chains and pressure the stack of green corn is drawn down very tightly; after this water is placed on the top of the corn. The manufacturers advise sowing oats and the roots form a sod which prohibits the air from getting down from the top. Of course the outer butts of the corn are exposed all the time to the air. The idea of the manufacturers is that about six inches of butts will rot off and seal up the remainder and soak the silage so it will come out in the winter and spring in good shape. What the outcome of this will be I cannot at the present time say. One disadvantage I can see is that it is very difficult to make your stack straight and it is very difficult to get these bundles of corn so as to make your stack as high as you desire. The quality of the silage will be governed by the size of the stack to a great extent so it is very necessary to have a large stack both in diameter and height. If we were better prepared to make an extremely large stack there would be rather a small percentage of corn wasted, but this system would not be successful for a small stack.

MEMBER: How about a steel silo?

MR. VAN PELT: The acid in the silage eats out the steel and the life of it is not long. Each year you would need to treat it with some material to keep the acid from coming in contact with the steel.

MEMBER: Would you have the inside of the foundation of a stave silo come flush with the outside of the silo?

MR. VAN PELT: It is not absolutely necessary. You may have your foundation say eighteen inches thick, your staves could set right in the center of that; then on the inside you need to dig out a dish shape for your bottom, fill that with cement to keep the rats out and make it smooth, then have this bottom extend on to your wall three or four inches. It should not form a shelf; the inside of your silo should be absolutely smooth so the silage will settle along the edges to the best advantage.

MEMBER: That is the point I wanted to bring out. Some years ago my father built a silo in Wisconsin and made the mistake of digging down four feet in the ground and then built the silo so it left a shelf four inches wide, and that caused a great deal of trouble until we lined the inside of the silo, after which we had no more trouble.

MEMBER: Is silage good for other farm animals than cows?

Mr. Van Pelt: Yes, for almost any class of farm animals. To work horses it should not be fed to such a large extent, of course. For brood mares and brood sows it is good but should be fed in more limited quantities.

Mr. Carpenter: I would like to give my experience in regard to feeding brood sows. We built a silo of split fencing and lined it inside and out with paper between both the inside and out. We treated the inside of it with gasoline and gasoline tar, about one-third gasoline and two-thirds gasoline tar, and put it on with a whitewash brush. We used that silo for seven years and at the time I left the farm I took my knife and went down to the bottom but it was so hard and glossy it would turn the edge of the knife. I found that solution was helpful to my silo. I believe the splitting of that fencing made it thin, leaving it only a half inch thick, and it bent around to 2x4 very readily. I believe that silo stands there today and it was built twenty years ago; it was very cheap, never bulged and was altogether very satisfactory. I had a cow by the name of Louise that we milked and weighed her milk in June and the best she ever did was to give thirty pounds a day. We experimented with that cow, fed her ensilage with a balanced ration, and during the same period of lactation she gave us 35 pounds of milk a day in January. I believe it is generally conceded that ensilage is almost a perfect food for the production of milk with the bovine mother. When land is worth $100 an acre we cannot afford to farm as we did when it was worth $10. We must concentrate and the ensilage is the best food for winter feeding, and I say this from actual experience.

Mr. Baer: When refilling the silo, if there as some of the silage left in the silo, would you advise removing that, or would it be all right to fill on top of it?

Mr. Van Pelt: Fill right on top of what is left. That is one thing about corn silage, once it is sealed over it is always good. Of course the portion of silage on top rots, this may be six inches or two or three feet. If it is well tramped in and well packed down there should not be over six to nine inches of the silage spoiled. Then it is necessary, of course, to throw off that six or nine inches of spoiled silage, but you can fill on top of the rest and it makes as good silage as anything else.

Member: Have you had any experience with stone silos?

Mr. Van Pelt: No personal experience but I believe stone makes a very good silo. Of course after the stone is laid it is necessary to make the inside wall perfectly smooth and the cement used for the inside of the wall should be quite strong, at least one part of cement to three parts of sand or gravel. It would last a great deal longer than a stave silo and of course would be cheaper in the long run. Of course the cost would depend on how much the rock cost and if the mason work was not too expensive it would probably be cheaper to build and would make as good a silo and better because it would last longer.

THE CHAIRMAN: I believe we will have to declare this question closed. I am sure the address and discussion has been very helpful to all of you. This talk on silos is something that many of us needed and I will say that I heartily concur in what Mr. Carpenter said in regard to the use of coal tar and gasoline on the inside of his silo. I built a silo seven years ago and I believe there are few if any of the boards rotted at all, and I use coal tar and gasoline for the inside.

Now we want to bring up one or two matters that will only take a moment and then we will adjourn. Mr. Edwards has a little matter he wishes to present to you with reference to some local secretaries or vice presidents of this association, and we will now give him an opportunity to present his ideas.

REMARKS.

MR. L. S. EDWARDS, VICE PRESIDENT IOWA DAIRY ASSOCIATION.

Mr. Chairman, Gentlemen of the Convention:—In serving you as vice president for the last year I have at least tried to make a study of the conditions of the buttermakers and dairymen in the state and have come to this conclusion, that we are not organized. In a sense we are not organized. We come down here to our annual meetings once a year, become enthusiastic and while we are here plan to go to work, but about the time we get ready to go to work we go home and when we are home about two weeks most of us are asleep. That is the trouble with us; we are not close enough together; we are not organized. Now I have a plan to offer. I do not care to have you take action on it now, but I want you to talk it over among yourselves. My plan is that we divide our state up into sections; I would suggest six, and that our president appoint either local secretaries or second vice presidents, as he may see fit, to take charge of these sections, have a secretary in each section and hold that secretary responsible for the work in his territory, give him charge of the local meetings and by so doing he will be in close touch with the buttermakers, can reach any of them over the telephone. In that way we can keep the local meetings going along nicely; keep in touch one with another and be waked up. Not only that, but by doing this the local secretary can get right after the buttermaker and make each buttermaker go to every patron he has with a petition, and if we can get every patron of every creamery in the state of Iowa to sign a petition and turn it over here to our legislative committee, the legislature cannot turn us down, we will be too strong. But the trouble is, we have never been organized to go to work at this right. If we can get some good, wide-awake fellows in these different sections that will go after the buttermakers and stir up these local meetings and get these petitions out, there is no doubt about our getting an appropriation to support this organization. Our association has always been supported by the buttermakers and by their good friends, the different commercial people over the state, but it is a shame for the state of Iowa, with the amount of dairy business done in the state, that the Iowa Dairy Association has to beg for funds with which to carry on these meetings. It is a shame and disgrace to the state. The only way to avoid this is to organize, get together and go to the legislature in such a body that they cannot turn us down.

There are a few minor points I might mention along with this, and that is in regard to the state meetings and the National Buttermakers' meeting. The local secretaries can do a wonderful work along this line. I know of quite a few men that are not here today because they knew of no one that could take their places. The local secretary can get in touch with the men that are idle and are willing to take the place of a buttermaker while he comes to the convention, and that will help some of the boys. Not only that, but he can get his local meetings together and get the boys lined up to come to the meeting of the state association and of the National Buttermakers' association in a body, get the boys together and get them to work in harmony. That is the best way I know of in which to do things.

I hope you will consider this and will take it up at some other meeting when we will have a little more time to consider it. I thank you.

THE CHAIRMAN: I wish to say I fully concur with Mr. Edwards in all he has said and I sincerely hope that you will talk this matter over and bring it up a little later. It is a matter that is worthy of consideration and I believe it is the only way to get shaped up so we can go before the legislature with any prospects of doing anything.

We will now stand adjourned until 1:30 this afternoon.

THURSDAY AFTERNOON SESSION.

Meeting called to order at 2 o'clock by President Barney.

THE CHAIRMAN: Gentlemen, we will open our program this afternoon with an address by Chief Webster, of the Dairy Division at Washington.

WHAT THE CREAMERY RETURNS TO THE FARMER.

E. L. WEBSTER, DAIRY DIVISION, WASHINGTON, D. C.

Mr. Chairman, Ladies and Gentlemen:—I am certainly very glad to be able to come here and meet you and talk with you a little while about dairy matters. There are a good many things about dairying many of us do not know. I find the longer I live the less I know about things that I thought a few years ago I knew a great deal about. As a man grows older he finds some of the things he knew when younger are not altogether as he looked at them then.

I must apologize for reading my address this afternoon because I have some figures and in order not to say what I do not want to, I have reduced it to writing.

In order to intelligently discuss the return that the farmer may expect from his creamery it will be necessary, first, to analyze the cost of manufacture. This cost has been variously estimated at from 1½ to 5c per pound of butter, depending upon the size of the plant and the economy used in the process of manufacture. After careful analysis of a large number of records on file in the United States Department of Agriculture we found the average cost of manufacture, as reported by all creameries in Iowa, Minnesota and Wisconsin, to be 2.1c per pound. In order to arrive at some conclusion as to what the cost should be in a minimum plant in which the overrun would pay the operating expenses, the creameries were classified into those making an average of 75,000 pounds of butter per year, and those averaging 150,000 pounds per year. One hundred and thirty-eight plants averaging 75,000 pounds, made butter at a cost of 2.78c per pound; 46 plants, averaging 150,000 pounds butter per year, made butter at a cost of 1.88c. As no attempt was made to select plants particularly well managed, these averages cover everything reporting of approximately this output per year.

There are many creameries in operation making less than 75,000 pounds of butter per year, but for this discussion it was considered best to take that size of plant in which 18.5 per cent overrun would be sure to pay the operating expenses:

TABLE NO. I.

	74,062-lb. Plant—	148,125-lb. Plant—
Buttermaker	$ 900	$1,000
Package	370	740
Coal	150	200
Salt	40	75
Color	10	20
Acid	5	10
Moisture test	5	10
Helper	150	250

Drayage	79	100
Secretary	180	200
Other officers	85	95
Printing and stationery	25	25
Butter for contests	35	35
Convention expenses	25	25
Total	$2,059	$2,785

Average cost in 138 plants averaging 75,000 lbs..............2.78c per lb.
Average cost in 46 plants averaging 150,000 lbs.............1.88c per lb.

Table 1 will give an idea as to how the cost is distributed. Attention is particularly called to two items which usually do not appear in the expense account of a creamery—these are $35, which has been allowed for butter sent to contests of various kinds, and $25, which is allowed for the convention expenses of the secretary or manager of the creamery. It is believed that these two items are legitimate expenses and should be paid by the patrons of the co-operative creamery, or by the owners of an individual plant. This table also shows that the total cost of manufacture in a 75,000 lb. plant is $2,059, while that of the 150,000 lb. plant is $2,785. It is believed that this allowance is ample to cover all the legitimate expenses of operating creameries of this size. The figures are based on the operation of a whole milk plant. The cost will not be so great in a plant receiving a large amount of cream or in which the total receipts are from cream deliveries.

TABLE NO. II.

Smallest creamery in which the overrun will pay operating expenses—
500 cows
125 lbs. butter fat each per year

62,500 lbs. butter fat per year.
18½ per cent overrun

11,562 lbs. butter in overrun
62,500 lbs. butter fat

74,062 lbs. butter
2.78c per lb. for making

$2,059—Cost to maintain plant.

11,562 lbs. of butter must bring $2,059 to pay cost of making, 17.8c per lb.

Table 2 shows the business done in a small creamery in which the overrun will pay the operating expenses. It is assumed that 500 cows giving an average of 125 pounds of butter fat per year would supply this creamery, which is a very low average yield per cow, much lower than it should be. These cows will produce annually 62,500 pounds of butter fat. If the average overrun of 18.5 per cent is used as a calculating basis there will be made from this butter fat 74,062 pounds of butter, of which 11,562 pounds are overrun. If the cost of manufacture in a plant of this size, as shown in Table 1, is 2.78c per pound, this would make a total cost of $2,059 for operating the plant. In order that the 11,562 pounds of butter should bring $2,059 it would have to net the creamery 17.8c per pound. These estimates were made at this low price in order to prove that there has not been a time since 1897 when a creamery of this size would not pay expenses from the overrun. At present prices the overrun from a creamery supplied by 400 cows would accomplish the same results.

TABLE NO. III.

Comparison with creamery double the size of minimum—
1,000 cows producing 125 lbs. each equal 125,000 pounds.
500 cows producing 250 lbs. each equal 125,000 pounds.
125,000 lbs. butter fat per year
18½ per cent overrun

23,125 lbs. butter in overrun
125,000 lbs. butter fat

148,125 lbs. butter
1.88c per lb. for making

$ 2,785—Cost to maintain plant

23,125 lbs. butter at 17.8c per lb.	$4,116
Which leaves a balance of (above cost of operation)	1,331

For the sake of comparison, Table 3 shows double the amount of butter manufactured in one year. To do this would require 1,000 cows, giving 125 pounds of butter each, or 500 cows giving 250 pounds each, or 750 cows giving 166 pounds each.

In this one statement there is text for a whole sermon as to ways and means of increasing the yield per cow, and the income of the farmer. But as this has no place in this particular discussion, nothing more will be said upon this subject.

From 125,000 pounds of butter fat 148,125 pounds of butter would be made, giving an overrun of 23,125 pounds. The cost of manufacture, as shown in Table 1, is 1.88c per pound, making a total cost of $2,785.

If the overrun were valued at the same figure as that used in Table 2, 17.8c per pound, it would bring $4,116, or $1,331 above the cost of manufacture. If this buter were sold at the average price for the first nine months of the year 1907, it would bring $3,648 above the cost of manufacture.

In a co-operative creamery this amount is usually distributed *pro rata* to the farmers and brings the price which they receive from to 1 to 2 cents above the prevailing market price for butter.

In various sections of the country the question has arisen from time to time as to which is the more profitable, to make butter or to sell cream to a central plant. Buyers representing large interests have offered to buy the cream received at various creameries, claiming that they could pay enough to make it a profitable venture for the creamery. Propositions of this kind are often made to the smaller creameries and considerable argument is brought to bear that it is foolish to pay the expense of churning when the cream could be sold at a figure which would not only save this expense but net them a profit in addition. As this is a matter of vital interest to the farmers selling cream it is thought best to give a few comparisons to show whether or not a small creamery can better afford to sell its cream or make butter. Taking the minimum plant in which the operating expenses will be paid by the overrun, 62,500 pounds of butter fat at 23c in New York, would bring a gross return of $14,375, as shown in Table 4. We will further assume that there is to be no deterioration in the quality of the cream and that the plant is to be kept up to its maximum condition and that in order to do this the buttermaker, or a man equally as good, will have to be retained to receive and forward the cream. I think it is a conservative statement that it will cost the creamery company not less than 1½c a pound to receive and forward this cream, make out the checks and handle all the business incidental to a creamery. At this rate it would cost $937 to operate the plant on this basis, giving a net return to the creamery of $13,438.

TABLE NO. IV.

Suppose New York quotations are 23c.

Suppose New York quotations are offered for butter fat F. O. B. place of shipment.

62,500	lbs. butter fat at
23c	
$14,375	
937	equals cost of handling at 1½c per lb.
$13,438	equals net returns
62,500	lbs. butter fat, plus
11,562	lbs. overrun, equals
74,062	lbs. butter
24c	per lb. equals 23c, plus 1c premium
$17,774	gross returns, less
2,059	cost of maintaining plant
$15,715	returns, less
1,777	freight and commission
$13,938	net returns
13,438	net returns from selling cream
$ 500	difference in favor of running creamery.

In case of the 150,000 plant the saving would be $2,335 in favor of churning.

If this cream were churned into butter at the plant, 74,062 pounds would be made. From a large number of reports on file it is fair to state that the average, first class butter brings on the New York market or any other good market, a gross return of 1c above the highest quotation for extras. Assuming that this is true, in this particular case, the gross returns for the cream would be $17,774, deducting from this the cost of maintaining the plant, $2,059, this leaves $15,715. From this there must still be deducted freight and commission, which would amount to at least 2.4c per pound, or a total of $1,777. This would leave a net return for the butter of $13,938, which would be $500 more than would be received for the cream, had it been sold for 23c per pound.

In the case of a plant of double this size, the saving would be $2,335 in favor of churning.

A creamery manager may well consider whether it is profitable for him to close down his creamery and sell cream, should such a proposition be made him. The calculation cannot stop with the loss of a few dollars between the price received for the cream and that received for the butter for the first year. As soon as the local creamery begins to sell its cream to outside parties the door is opened for all sorts of competition, the result of which is almost sure to ruin the creamery. Competition between cream buyers in many sections is very keen and all sorts of methods are resorted to to secure the goods. The usual prices are raised and sometimes tests and weights are juggled.

The incentive that is given a farmer to produce a good article of cream is largely removed because he no longer sees the result of his cream in butter.

With the local creamery there is a certain pride in the neighborhood which assists in keeping up the quality of the product. This is particularly true if the creamery is a co-operative one and the farmer feels that the product is a part of his own work and he has a pride in knowing that it will bring the highest market price and that his creamery will bring the most returns to himself and his neighbors.

As has been previously stated, there is a large number of creameries reporting to the U. S. Department of Agriculture every month, on blanks which give a complete statement of the business done, the overrun obtained, the prices received for butter and the prices paid for butter fat, and, in case of co-operative creameries, the expenss of operation.

TABLE No. V.

Comparative Prices For 1907.

Month	Average of Creameries Getting 18.5% Overrun or Better		New York quotations	Paid by a large central creamery
	Number creameries	Average		
January	144	32.56	30.80	28.47
February	126	34.84	32.54	29.40
March	108	31.05	30.61	28.20
April	89	30.98	30.69	27.07
May	82	25.07	25.07	21.20
June	156	25.11	23.60	19.67
July	145	25.89	24.70	21.06
August	200	26.54	24.76	21.30
September	152	29.95	27.68	23.53

There have been compiled from these statements the figures shown in the first part of Table 5. Only those creameries making an average of 18.5 per cent or more, overrun have been considered in these averages. The creameries making these reports are situated in Iowa, Minnesota and Wisconsin. Many of them are very small plants, and a few quite large. The average amount paid to the farmers is interesting when compared with the New York quotations for the same months. In gathering these statistics it was difficult to secure information from the large centralized creameries. They considered that it was no business of the U. S. Department of Agriculture as to what they paid to the farmers for cream as received for their butter. As a result they have not been urged to make reports but, incidentally, a report has come into our hands showing what one of the large creameries paid during the first nine months of 1907.

TABLE No. VI.

Difference in Prices.

Month	Individual Creameries Paid Over New York Quotations	Centralizer Paid Less Than New York Quotations	Difference in Favor of Individual
January	1.76	2.33	4.09
February	2.30	3.14	5.44
March	.44	2.41	2.85
April	.29	2.62	3.91
May	Same	3.87	3.87
June	1.51	3.93	5.44
July	1.19	3.64	4.83
August	1.78	3.46	5.24
September	2.27	4.15	6.42
Averages	1.28	3.39	4.67

Table 6 shows the difference between the price actually paid by the small creameries and the New York quotations, and that paid by the central plant in question and the New York quotations. It will be noted here that the small creameries paid an average of 1.28c above the New York quotations and that the centralizer in question paid 3.39c less than the New York quotation, or 4.67c less than the amount paid by the small creameries.

It has been asserted that the prices offered by the central creameries in Iowa and other northern states compare more favorably with the prices paid by the coperative and individual creameries in those states than this table seems to indicate. This probably is true, as the prices are given for the particular centralizer in a more southern state where there are practically no co-operative creameries and not over 50 or 60 creameries of any kind in existence, with 90 per cent of those centralizers on a greater or lesser scale. My personal knowledge of the locality where these prices were paid leads me to believe that were there an appreciable number of active, aggressive co-operative creameries in that state, the prices paid would be materially advanced. That there are many localities in the state under consideration where co-operative creameries could exist there is no doubt.

With these facts before them the farmers of Iowa should consider well whether they want to control the situation by owning their own creameries, or allow the cream to go to plants which are entirely beyond their control and from which returns may not be equal to the returns made by the smaller creameries.

Another fact gathered from the reports received from the creameries is worthy of attention in this connection. There has been each month compiled a comparative statement of those creameries making less than 18.5 per cent overrun and those making more. There was a remarkable uniformity in the variations in prices that these creameries were able to pay to the farmers. For the nine months of this year the difference in the returns to the farmers between those getting less than 18.5 per cent and those getting more than 18.5 per cent overrun varied more than 1 to 2c per pound, and averaged in most months about 1½c more per pound of butter fat received by farmers patronizing creameries in which the overrun was more than 18.5 per cent.

TABLE VII.

Returns to farmers from different overrun on 23c New York market, 1c premium:

Creamery receiving 125,000 lbs. butter fat getting 13 per cent overrun, pays 22.18c.

Creameries receiving 125,000 lbs. butter fat getting 18.5 per cent overrun, pays 23.36c.

Creameries receiving 125,000 lbs. butter fat getting 23 per cent overrun, pays 24.34c.

Creameries receiving 62,500 lbs. butter fat getting 13 per cent overrun, pays 21.14c.

Creameries receiving 62,500 lbs. butter fat getting 18.5 per cent overrun, pays 22.30c.

Creameries receiving 62,500 lbs. butter fat getting 23 per cent overrun, pays 23.27c.

A large centralizer getting not less than 23 per cent overrun pays 19.60c.

This centralizer pays 1.51c less than small creamery with 13 per cent overrun and pays 4.74c less than average creamery getting 23 per cent overrun.

The farmer pays the difference.

In order to give these figures some meaning, we will again take for consideration two creameries, one receiving 62,500 pounds of butter fat and the other double that amount, 125,000 pounds, as shown in Table 7. Assuming that the New York price is 23c and that the average premium is 1c, these creameries would get 24c gross for their product, from which, of course, must be deducted the freight and commission. A creamery receiving 125,000 pounds of butter fat and getting a 13 per cent overrun could pay on this basis 22.18c per pound. The creamery getting 18.5 per cent overrun could pay 23.36c, while the creamery getting 23 per cent overrun could pay 24.34c, which would be 1.34c above the quotation for butter.

In case of the smaller creamery it would be, for the 13 per cent overrun, 21.14c; 18.5 per cent overrun, 23.30c; and for the 23 per cent overrun, 23.27c. You will note in each case that the creamery getting only 13 per cent overrun pays more than 2c less per pound than that getting 23 per cent overrun, and more than 1c less than those getting 18.5 per cent overrun. These estimates are based on evidence gathered from reports and while they may appear theoretical they are very close to the actual facts shown in these reports. At the same time, while these creameries could pay these amounts, the statistics from the central plant before referred to, show that with a 23c market and with an overrun of not less than 23 per cent they paid but 19.6c per pound, 1.5c less than the small creamery with the 13 per cent overrun and 4.74c less than the larger creamery getting 23 per cent overrun.

These figures are not given with any spirit of "knocking" on the large centralizers of the country. They are simply facts, gathered from reports to the Dairy Division of the U. S. Department of Agriculture and should be placed before the farmers and creamery men of the country so that they may know what the actual condition is. I do not claim that the centralizing creameries could pay as much as small creameries, for the reason that their cost of operation is a great deal more. It seems that the only legitimate way in which the creamery situation can be considered is on the basis of a net return to the farmer in every case. If the farmers can organize and operate their own business and save from 1¼c to 4¾c per pound on his butter fat, it would seem to be a wise business proposition on his part to do so. If the community cannot support a creamery, there being too few cows, less than 400 as a minimum estimate, the farmer will, of necessity, have to ship his cream to some point where it can be churned, and for these farmers the centralized creameries are a necessity.

On a number of occasions the question has been raised whether or not the butter made in the centralized creameries will bring as much as that made in the small creaemery. Those interested in the large plants have persistently claimed that they could get full market value for their butter.

TABLE No. VIII.

Average Elgin prices January 1 to September 30, 1907..............................27.58¢
Average New York prices January 1 to September 30, 1907..........................27.83¢
One large Centralizer gets net ½¢ under Elgin.
Any creamery making good butter gets New York + 1¢.
Commission and freight on butter at
27.83¢ + 1¢ premium equals 2.59¢.
28.83¢ - 2.59¢ equals 26.24¢.
Centralizer gets 27.08¢.
Creamery getting 50,000 pounds butter fat and making 18.5% overrun can pay on this basis..............26.98¢
Centralizer did pay 24.43¢
Or..................... 2.55% less than a 400-cow creamery could pay.

For purposes of comparison of values Table 8 is given. The average Elgin prices from January 1 to September 1, 1907, was 27.58c, the average New York price for the same period was 27.83c. The United States Department of Agriculture is in possession of figures which show that one concern got on track at the place of their factory ½c under Elgin. Any creamery making Extras or Specials, if it properly understand its business, can get 1c above the New York market or its equivalent in any large market. The New York market averaged 27.83c for the last nine months, to which 1c premium must be added. The commission, freight and drayage average about 2.59c. Deducting this from the quotation, plus the premium, would leave a net return of 26.24c. According to the statement of the centralizer in question its net return would be 27.08c. Assuming that the smallest creamery could operate profitably at present prices 400 cows and 50,000 pounds of butter fat per annum. If this creamery got an average overrun of 18.5 per cent on the previous basis of cost it could pay to its patrons 26.98c per pound.

As a matter of fact, from the prices given by the centralizer in question, it paid 24.43c, or 2.55c less than a 400 cow creamery could pay. The cost of operation in this small creamery could be nearly doubled and still the same price be paid to the farmer as those paid by the centralizer.

There are approximately 500,000,000 pounds of creamery butter made in the United States annually. Two alternatives naturally present themselves to those interested in the development of the creamery business of the country. If a well organized co-operative or individual creamery can pay, as shown in previous statements they are paying, 4.64c per pound more than some of the leading centralizers can pay, which is the better policy, to develop the co-operative and small individual creamery, or to develop the centralizer system to such a degree that it will supersede the co-operative and individual creameries.

It is true that large amounts of money are invested at the present time in central plants, but their investment is only a very small fraction of the investment of the farmer. The investments in hand separators of those farmers who patronize central creameries alone represent more value than the entire property used by the centralizers. That system should assuredly stand which will give the farmers the greatest net return. Where there are less than 400 cows in the community the only way for the farmer to sell his produce is through the centralizing plant, large or small, until the time shall come when there shall be enough stock and sufficient itnerest to organize and build a co-operative plant.

When that time comes the farmers can assuredly very materially increase the interest on their investment by operating their own plant. This statement has been made a number of times by those who are interested in the centralizing system. They cannot deny the fact, and yet in the face of this, it will be found that there is scarcely a community in Minnesota, Iowa or Wisconsin, or in any of the butter states in which there are not at present active agencies being established for the purchase of cream and its shipment to centralizing plants. Statistics amply show that active co-operation amongst the farmers increases their economic wealth.

Let us see if the centralizing system has developed or is developing the dairy industry in such a way that this result is secured. In 1905 creameries, cheese factories and condenseries paid the farmers of the

United States 31.3 per cent more for milk than they did in 1900. If the dairy industry is developing normally and equally in all parts of the country we would expect to find the greatest proportional increase in those sections where dairying was in its earlier stages. Let us compare the conditions in a section in which the co-operative and the individual system has been developed and maintained with a neighboring section in which the central system has superseded the smaller creameries. In the five years from 1900 to 1905 the number of creameries, cheese factories and milk condenseries in Michigan increased 29.7 per cent. In Wisconsin the number of similar establishments increased 16.9 per cent in the same period and in Minnesota there was an increase of 12.6 per cent. These are typical co-operative creamery states in which the central system has made little headway.

For comparison, let us consider the neighboring dairy states of Iowa, Kansas and Nebraska. In 1900 the Iowa creameries were almost entirely on the co-operative or individual basis and paid to the farmers only a little less than was paid in the neighboring state of Wisconsin. In the following five years the centralizers encroached on the smaller creameries until the number of establishments was reduced 53.7 per cent. In Kansas and Nebraska dairying was less fully developed and the central system almost completely superseded the small plants. In Kansas the decrease in numbers of establishments was 47.4 per cent and in Nebraska 57 per cent for five years following 1900. Now let us see in which of these sections dairying has made the most progress. In Michigan the farmers received from creameries, cheese factories and condenseries 116 per cent more in 1905 than in 1900. In Wisconsin the increase was 58.4 per cent. In Minnesota the increase for these five years was 54.9 per cent, an average for the three of 64.5 per cent. In Iowa, where the central system had in this period to some extent displaced the smaller individual creameries, the amount received by farmers from creameries, cheese factories and condenseries decreased 5 per cent. This is notwithstanding the fact that there has been a steady increase in the price of dairy products.

In Nebraska and Kansas dairying should show for this period a greater percentage increase than the older, more completely developed states. In Nebraska we find an increase of 44 per cent and in Kansas a gain of only 6.3 per cent, or an average for the three of only 2.2 per cent. The increase in Nebraska is due very materially to the development of the large central plants at Omaha. Much of the credit of this increase should go to Iowa, instead.

Which system has been more favorable to the development of the dairy interests?

The farmers of Iowa, Kansas and Nebraska might aptly quote from the famous speech of Patrick Henry: "You say we are weak, but when will be stronger?"

MICHIGAN.

Changes in Number of Creameries, Cheese Factories and Condenseries		Change in Amounts Paid for Material by Creameries, Cheese Factories and Condenseries	
Year	Number	Year	Amount
1905	371	1905	7,027,263
1900	286	1900	3,274,264
	85 = 29.7% increase		3,742,999 = 116% increase

WISCONSIN.

1905	2,360	1905	26,406,185
1900	2,018	1900	16,623,859
	342 = 16.9% increase		9,783,226 = 58.4% increase

MINNESOTA.

1905	771	1905	11,139,565
1900	596	1900	7,188,711
	75 = 12.6% increase		3,950,854 = 54.9% increase

IOWA.

1900	907	1900	13,501,556
1905	655	1905	12,895,630
	352 = 53.7% decrease		605,926 = 5% decrease

NEBRASKA.

1900	93	1905	2,671,978
1905	40	1900	1,854,228
	53 = 57% decrease		817,750 = 44% increase

KANSAS.

1900	171	1905	3,255,735
1905	90	1900	3,062,335
	81 = 47.4% decrease		193,400 = 6.3% increase

I could close with no more fitting statement than that made by President Roosevelt in his speech at Lansing, Mich., before the Agricultural College, on May 31, of this year, in which he states as follows:

"The people of our farming regions must be able to combine among themselves, as the most effective means of protecting their industry from the highly organized interests which now surround them on every side. A vast field is open for work by co-operative associations of farmers in dealing with the relation of the farm to transportation and to the distribution and manufacture of raw materials. It is only through such combinations that American farmers can develop to the full their economic and social power."

The Chairman: Is there anyone here that would like to ask Professor Webster a question? This is a matter that I think is of great importance and I feel certain that he will be glad to answer any questions you may ask.

Gov. Hoard: I would like to have considered for a moment two propositions which Professor Webster did not consider, concerning the reflex effect of the two systems upon the welfare of the dairy interests of this country. First, the co-operative system is like the country district schoolhouse, it is an educational center Think what the educational interests of this country would be if you should destroy the country district school, depending only upon the universities! Why, the foundation of all the educations of this country lies right there in the country district school. Destroy the root, and where would the branch be? The promotion of dairy education among the very men that need it most is wonderfully accelerated by the fact of the local creamery. The fact that those men are brought into contact with each other each day and in contrastive contact, so that A can talk with B and B with C, and do that kind of co-operative reasoning which is at the bottom of all progress, is brought out by the local creamery. Abrogate that, remove the whole point of comparison and the co-operative or communial effect and what is the result then upon the promotion of dairy education and understanding.

Second, you very well now, you men in Iowa, something of the contest we had from 1900 to 1902 or from 1899 to 1902 in Washington on the oleomargarine question. Your humble servant was then President of the National Dairy Union and knows something of the roots of this question. The creameries of the United States were the centers from which could radiate information and understanding upon this point, which could be brought to bear upon the political understanding of the members of Congress. Where would we have been at that time if we could not reach the farmer? There was about $20,000 spent in double postal cards; on one half was printed what the farmer was asked to say to his member of Congress, on the other half, using his own language, and it had a tremendous effect. How would we have reached this great sentiment of the country and thus arrested the progress of a counterfeit and fraud if we could not have had these centers to which we could appeal. These creameries are like culture spots in the study of bacteriology, from which spring the bacterial effect all around, and I want to say to you that the difficulty today with the average farmer is that the man is dealing with a million dollar proposition with a fifteen cent understanding.

Prof. Webster: Right in connection with what Governor Hoard has said about the oleomargarine situation, you know the beef men all over the country stated they would have to cut so much off the price of their beef if the oleomargarine bill was passed. Let me say to you that before the Nebraska Railway Co. in Nebraska the question was up for influencing the dairy business, and certain creamery interests told the farmers if they did not do what they wanted them to do, they would cut off their pay roll at the creamery. The co-operative creameries do not want to be in a position to say that to the farmers.

Member: I have had some actual experience in the creamery line and in the co-operative business. I was interested in a co-operative creamery and own that creamery at the present time, am operating it now and have been operating it for several years, and I belive it is actually the farmers' fault when they leave their own creamery and ship their cream to the centralizers and it is only going to be a short time until their creamery is gone and, as Mr. Webster said, they will get at least four cents less on the market for their product. The thing for the farmers to do is to stick to their own creameries and stay with them. Keep it well in mind that it will be to your benefit to do so.

Prof. Bowers: In Mr. Webster's comparison he has taken a number of creameries from Iowa, Minnesota and Wisconsin, but he always took those creameries that showed an average of 18½ per cent. What percentage of the creameries in Iowa, Wisconsin and Minnesota that have reported has he used for his comparison with the central plants? I ask this for this reason. I believe if he made a comparison with the central plants with some of our poorly constructed, poorly managed co-operative creameries he would probably have shown figures as startling as is shown on the chart here today, and I think there is a great deal of opportunity for the department to work up a comparison with the poorly managed creamery and the better managed creamery and it would perhaps show a little more fairness towards the centralizing plants. I am not a friend of the centralizers; I am a friend for everything that makes for progress in dairying but at the same time I like to see just a little more fair play to the centralizing plants. I think the time will come when the co-operative creameries, when they have adopted some of the better business methods, of the straightforward, honest business methods of the centralized plants, that there will be no question but that they can compete and compete successfully with any centralizing plant in the business. I do not know whether you have any figures, Mr Webster, that would show up more clearly the average earnings made by the small creamery.

Mr. Webster: The one that showed 13 per cent overrun in a small creamery manufacturing 75,000 lbs. of butter, would be an average of the condition of the poorer creameries reported to us. We divided the creameries into two classes, those getting less than 18½ per cent and more than 18½ per cent, and the average overrun of these is less than 13 per cent; the average overrun of those getting more than 18½ per cent is 21½ per cent.

I would not insult the intelligence of the men in the centralized creameries by comparing them with poorly managed creameries. We must compare them with well managed creameries to get like results. At the same time I showed you actual facts as they exist in the territory where centralizers fix the price. They pay less than every poorly managed creamery you spoke of at the present time.

Prof. Bowers: The point is we want to have efficient, strong co-operative creameries. I think a lot are mismanaged and perhaps we might emphasize that a little more. As to getting 13 per cent overrun, I do not think it is possible to get 13 per cent overrun in any creamery unless it is a whole milk plant where they lose a lot of fat in the skim milk and butter milk. The fact that you have put a 13 per cent overrun there would show that while those creameries might be only geting a 13 per cent overrun, it might be due to over-reading the tests. All these are points that should be emphasized in that direction.

Prof. Webster: That is another question entirely and for the sake of this argument I tried to eliminate that feature. I could talk half the afternoon as to what the poor creameries ought to do, but at the same time if a difference of four cents per pound exists between what the centralizing plants are paying and the better class of co-operative creameries are paying, it would mean about twenty million dollars a year, and the very worst we could say of the situation, should all the creameries get these small overruns, it would only lose the farmer from three to five million dollars a year, so it is really much smaller in comparison than the other thing I have been talking to you about this afternoon. I have given you these facts simply to get you thinking about this situation and encourage you in the belief that the small creamery will predominate and eventually, as in the case in Vermont where the first centralizer was ever started it has been put out of business to-day by the co-operative creameries in that territory. The economical proposition is absolutely wrong. If you double the cost of manufacture by the central system it is a wrong proposition and a well managed co-operative creamery, as you say, can walk them out and are doing it in different parts of the country.

MR. HUBBELL: Have you figures to show that the large centralizers pay the same price in all communities?

PROF. WEBSTER: A centralizer told me that "because of competition we have to pay more in some places than in others."

THE CHAIRMAN: This is a very interesting subject and we would be glad to give you all the afternoon if we had the time to devote to this subject, but we will have to pass on to the next.

I had in mind quite a number of things that I wanted to say in introducing the gentleman that will next address you, but I don't know of anything I could say that will add to his reputation and luster as a man who has stood for the last thirty years or thirty-five years for the dairy cow. I became acquainted with Governor Hoard about twenty-five years ago. In my work traveling through Wisconsin I made Fort Atkinson and Governor Hoard was then publishing the Jefferson County Union, and I think his influence has had more to do with whatever I had to do with dairying and the cattle interests than almost any other man. I was struggling then to get a few hundred dollars together to get started in the dairy business and I do not know that I ever called at Fort Atkinson that I did not go in and have a talk with the gentleman that will now address you, Governor Hoard.

DAIRY FARMING.

W. D. HOARD, FORT ATKINSON, WIS.

Mr. President, Gentlemen of the Convention:—I am in some respects like my friend, Professor Webster; I have reduced what I want to say to you to writing for two purposes,—one for your sake that you may not be inflicted upon by an interminable talk, the other for my sake that I can say as little as possible.

As much as we may strive to exalt the creamery or the cheese factory, still there remains this great, everlasting truth that we cannot go ahead of the proposition with any safety to ourselves. It is given to but few men to act the part of a Sherman, guide men from their base of supplies, march to the sea and live off the country. The farmer is the primal proposition and a good many years ago I saw it and pretty much all I have tried to do has been to get the farmer to see the truth that I saw in the distance. I hear a great deal of complaint about poor creameries; I never saw one that existed in an intelligent farm neighborhood. Never. An intelligent community of farmers will not have a poor creamery, and show me a first class creamery anywhere in the country and I will show you a first class intelligence on the part of the men who support it; therefore, to get at the root of the matter to elevate the dairy interests, to increase the efficiency of the creamery and cheese factory, we must apply our thought and purpose to the real foundation of the work.

I am going to talk to you today upon the general question of dairy farming. I might put it under a different head, but this is good enough. I am a good deal in the condition of the old German who remarked about his wife: "She pe not so very handsome and she pe not so very smart, but Gott in Himmel she is the best I haf py me."

I have been a close student of dairying, particularly from the farm end, for nearly fifty years. Fifty-six years ago I commenced the work—a boy. It was a fortunate thing I fell into the hands of a good man. I left my little country district school; had to go to work as a hired man on the farm and I fell into the hands of a man by the name of Simmons, who had fifty cows, and he encouraged me to come and work for him, and I worked for him most of the time until I was twenty-one. He taught me to make butter and cheese and to care for his farm and left it in my hands the last two years, and I had to manage this farm for him. I came west in 1857, in the midst of that great panic, the worst panic that this country ever saw, when not only business went to pieces, but money went to pieces and I cut wood in the woods on the Beaver Dam river in Wisconsin for twenty-five cents a cord. I could earn fifty cents a day. Think of it, young men who are groaning and complaining about hard times, when I was paid my fifty cents a day, three dollars a week, I did not know the next morning whether that money was worth anything. Think of it. Take courage, oh you sons of the soil; you know but very little of what this country has gone through to evolve this present condition. We call these hard times, we think now we are in the midst of a panic.

I have been a close student of dairying, particularly from the farm end, for nearly fifty years. In all this time I have been greatly impressed with the fact of the ignorance of men who keep cows, concerning what I may call the foundation principles of dairy practice. My greatest hindrance has been my own ignorance. In my lecture work in most every state of the union and in Canada, in my study and work as editor of a dairy paper, and on my dairy farm with a herd of forty registered cows, everywhere has this question of the necessity of more and better light, better understanding of plain simple dairy truth been constantly before my eyes. Everywhere do I see farmers struggling to win success with cows, and everywhere do I see only a very meager reward. All the time I have been convinced that there is from 100 to 600 per cent more net profit for any farmer to receive if he will but cast aside his prejudice and indifference and look at the question in its right light.

The more I investigate this question of net profit the more astounded do I become at the tremendous difference that exists between the men who think and those who will not think. Here is an illustration: There are two patrons of the Hoard's creameries living a half mile apart. One has thirty cows and the other nineteen. To the man with the thirty cows the creamery paid the sum of $35.00 per cow for the milk of one year. To the man with the nineteen cows was paid $60.00 per cow. It cost each of those men $30.00 a piece to keep their cows for the year. One man got $30.00 above the cost of keeping; the other man got $5.00. Thirty dollars is 600 per cent more than five dollars. Think of what an interest that is. What was the matter of the five dollar man? A lack of dairy understanding. What did it do? It caused, first, poor cows; second, poor stabling; third, poor feeding. The best cow in the world could not do good work unless well cared for and rightly fed.

I used to spend hours with that five dollar man to get him to see the truth about himself, his ideas and his methods. He would not read or inform himself. He was trying to do his work with too little exercise of brains. There were three factors or causes for that man's loss of good reward; poor thinking is first. Now that caused poor cows; caused him to provide poor stabling and poor feeding. Did you ever think of what would happen if a man went on to the race track with a 2,000-pound draft horse to compete with a thoroughbred trotter? Would such a man get any sympathy from the crowd if he lost his money, which he would be sure to do? All over Iowa, as well as other states, do we see farmers working hard to win on this dairy race track, with just about such an equipment of ideas, cattle and fitness of things.

In my cow census work, from the Atlantic states to the Mississippi river, I am overwhelmed with the poverty of ideas, cattle and care that farmers invest in this business; and I am amazed that they do not see where the trouble lies. Let me explain what a cow census is. I send an expert into a creamery neighborhood to investigate the year's business of 100 farmers who have been patrons of a creamery for a full year. I want to dig down to the very bottom of each farmer's business. The expert is to find how many cows he milked for the year; of what breed they are; how they were fed, stabled and cared for; and finally what was the cost of keeping those cows for a year, counting pasturage at $5.00. After all this knowledge has been obtained, at the farm end, he goes to the creamery and finds how much milk was received and how much cash the patron got for the year. Then he figures up from that how much the patron's cows earned at the creamery, for every dollar spent in feed. Lastly he inquires into how the farmer fed his own mind; whether he was a reader of dairy papers. This was to find whether he took any pains to be a well informed dairy farmer and note what effect that had on his fortune. Then the expert writes ten letters to Hoard's Dairyman describing the work of ten patrons in each letter. These patrons are described by number from 1 to 100, and not by name.

Now, you see that from 100 average patrons I can obtain a very fair idea of what the great body of dairy farmers in a state are doing. In

Iowa two of these cow censuses have been taken of 100 herds each. The first was taken in 1900, the last was taken in 1906. Each farmer may learn his own number if he desires it, but not his neighbor's number. Heretofore all that has been done to get at the real truth of what the farmers were getting from their cows at the creamery has been the poorest kind of guess-work. Creameries are not organized to help the farmer look into the conduct of his end of the business, and besides most of the time he does not care to know. But every creamery ought to be a dairy center from which should radiate all the knowledge and information it is capable of giving back to the patrons.

Think of what a flood of light would be poured out of the creameries of Iowa upon its patrons if a thorough cow census was taken each year by each creamery and the farmers had a chance to see squarely and truthfully (1) what their own cows were earning for every dollar spent in feed; (2) what their neighbors' cows were earning. Don't you think it would stir thousands of farmers to change their ideas, their cows and their methods?

It would be a great thing for the creameries, too, but they do not see it. They will twist and wring to get an additional patron, but they will not do a thing in a practical way to greatly increase the amount of milk that will come from their present patronage. That is something so close to their feet that they do not want to see it. Meanwhile the patrons are getting only about a tenth they might get at the same expenditure for feed and the creamery is complaining of small profits.

Let me read you some of the deductions from the last Iowa cow census.

IOWA COW CENSUS FOR 1906.

Summary of 100 Herds.

Territory: Three counties in Northeast Iowa, including patrons of eight creameries, average price of butter fat 22.7 cents per pound. Of these 100 herds 83, numbering 890 cows, are of the dual purpose type, 633 of these are earning a profit above their feed. Twenty-five of these herds, numbering 257 cows, over 33 per cent, are not paying for their feed. Seventeen herds, numbering 172 cows, are of the dairy type; of these 16 herds, numbering 163 cows, are earning a profit above the cost of their feed. But one herd, consisting of 9 cows, of this group, failed to pay a profit.

The average cost of keeping the dairy bred cows was $28.33 per cow. The cost of keeping the dual purpose cows was $27.23. The production of the dairy bred cows over the dual purpose was 68.1 pounds of butter fat, or $13.91. But four herds fed ensilage. They made $16.37 per head more net profit. The 172 dairy bred cows, 9 of which did not pay for their feed, produced $19.58 more net profit than the 890 dual purpose cows. That is a fact worth considering, when just the difference in breeding will make 172 cows earn $19.58 more net profit than 890 dual purpose cows.

Now we come to the effect of reading dairy papers in its influence on a dairy farmer's profits. Fifty of these farmers read such papers.

How did it affect their profits? They returned 24 cents more for each $1.00 spent in feed and their reading reduced the food cost of the butter fat over 2½ cents a pound. The average cost of keeping both dairy bred and dual purpose was $25.23. I told you that the mere act of reading on dairy subjects added 24 cents more for each $1.00 spent in feed, multiply $28.23 by 24 and you have $6.77. Did it pay these men to spend a dollar on the enlightment of their minds? Does it pay to buy $6.77 for one dollar? Yet nearly one-half of these 100 farmers do not believe it pays to buy $6.77 for one dollar. Of the forty-six farmers who did not read dairy literature nineteen did not get enough from their cows to pay for the keeping. Of the fifty-four who did read only six did not receive enough from their cows to pay for their keeping.

Now here is the actual condition of things in one of the most prosperous dairy sections of Iowa. Does it afford any food for thought and action? It should. Never again ought we to hear an Iowa patron of a creamery say, "It don't pay to breed in dairy blood," or "It don't pay to read a good dairy paper."

Understand that this cow census work has been done in twelve states, from Connecticut and New Hampshire to Iowa and Minnesota.

Everywhere is it shown beyond a shadow of objection that the farmer who reads on this dairy question, who thereby is made to think, is endowed with a greater profit-making judgment.

The question for you in Iowa is just the same as it is in Wisconsin. Don't think for a moment it is not. When once you become a patron of a creamery you are subject to all the items of dairy expense. What are these items?

(1) The feed of the cow.

(2) The labor of preparing her food, of milking and caring for her.

(3) The expense of proper stabling, for if you do not keep her comfortable you are losing money in milk.

(4) The expense of taking her milk or cream to the creamery.

In none of these items are you a whit different than are the special purpose dairymen of Wisconsin. When it costs you as much to be a patron of a creamery as it does the Wisconsin patron is it not time you looked at the question in the light of a larger profit? To secure that profit you must use the best cow you can get, and you must make yourself as intelligent on dairy principles as you can. When you are faced that way you will see clearly the truth of what I am saying to you.

Let me give you an illustration of what it means to one county in Wisconsin to be filled with a lot of farmers who breed and milk dairy cows and who read more dairy literature than the farmers of any other county, I believe, in the United States.

The county of Jefferson is 24 miles square. The cows in this county, largely Holstein, Guernsey and Jersey grades, earn over $2,000,000 cash annually. The butter production is 250 pounds per cow. In addition to this is the pork and veal crop from the use of the skim milk. This makes the average cash value of product over $60 per cow a year. But this is not all. Over $500,000 worth of dairy cows and heifers are sold from that county annually. Buyers come there from all over the United States and as far away as Mexico because they can buy cattle bred from

registered dairy sires. Don't you think it has paid these Jefferson county farmers to read, think and act, especially on dairy lines? I have no objection to beef farming. All I claim is that if the farmer is subjecting himself to the expense of a creamery patron he should have the most profitable cow he can get and be himself as intelligent in his administration of a dairy farm as he can be. Farmers do not read and reason enough on this question. They hold to worn out ideas of management; they waste an enormous amount of labor and time in methods that no well posted dairy farmer in the country would use. It would pay the creamery patrons of Iowa wonderfully well to visit the town of Lake Mills, Wis., and see how those German dairy farmers manage. There every farmer, I believe, but five, has a silo. Every bit of the corn crop is saved when at its highest feeding value. Compare that with the thou-
of dairy intelligence; larger dairy profit to stop these fearful leaks.
sands of acres of wasted corn fodder in Iowa and Illinois. It is the part
resolutely lay hold of two points; the improvement of their cows by the
What a dairy state Iowa could become if her creamery patrons would
infusion of dairy blood, and the improvement of their minds and judg-
ments concerning dairy problems. The average farmer does not allow
will wait and see," was their answer. I had spent five years in hard study
himself to learn much in any other way than by what he sees.

When I first began my campaign for alfalfa eight years ago I could not make a single one of my neighbors believe what I said about it. "We of the plant on city lots, trying to find out a method whereby I could make it survive in the severe climate of Wisconsin. Then I planted ten acres on my farm. It was two years before the farmers would consent to try it in half acre and acre patches. Now there are hundreds of acres of this most valuable forage plant growing in that county. The past season I harvested in three crops from 30 acres what I could have sold for $2,700. The farmer must become a better student of the business of farming. More than that, he must demand that the elements of agriculture shall be taught in all the country schools so that when his sons come to the years of understanding they can understand better than he does what is taught in books and papers. Hundreds of farmers have said to me in effect, "I would like to read these things, but I cannot understand the terms that are used, and what is the use?" If they had been taught the meaning of these terms in the country school as they were the terms of arithmetic they would not be hampered as they are now. Every farmer owes it to his son that he escape that bondage. Make the country school a great lever to lift up agriculture and your children "will rise up and call you blessed."

THE CHAIRMAN: Gentlemen, I am sure you have all enjoyed this splendid address and it is a talk that we have much need of in our state and that was one of the reasons that your Executive committee asked Governor Hoard to be with us to-day. We have just a little more time for discussion of this matter if there is anyone here that would like to ask the governor any questions.

Mr. Shilling: Governor Hoard, what do you do to get alfalfa—how do you get it started?

Gov. Hoard: I hung like a dog to the roots until I found out how. Every mistake I made was worth just as much to me as a success, but with my neighbors, if they lost one crop it set them back about five or six years and they were only encouraged to renew their experimental work by seeing the success that I was having. One German had four acres of as beautiful stand of alfalfa as I have ever seen. About the first of September it was dry pasture, green and beautiful, and he turned his herd of cows on it. I came by about two hours after he had done that and said, "Chris, for God's sake, what do you do that for? Why do you turn your cows on this alfalfa?" "Oh," he said, "Mr. Hoard, what does a newspaper man know about farming?" "Well," I said, "you fry in your own fat and you will know how much it takes. You go ahead, Chris, and next spring you will see no alfalfa." "Oh, I know better than that," but next spring, as I told him, the alfalfa was gone and the neighbors began to joke him, "Chris, why don't you raise alfalfa?" "Oh, you cannot grow dat alfalfa in this county. No." "Well, but Hoard grows it. Why don't you grow it? You ought to know as much as a newspaper man." I had told some of them his answer to me. Finally, after he had followed this thing down (don't you see that it is the only way we learn) he came down to me one day and said, "I want to talk mit you on dat alfalfa." "Well, Chris, have you concluded you would like to talk a little?" "Sure." I said, "I tried to have you stop. I had learned by hard experience that you must not cut alfalfa but must let it have its full growth. Indeed you must not cut it late; you must always cut it early so the next crop will come on early and the next crop and never cut the fourth crop. You put the cows on when it was tender and young, and you killed it. That was one point that was wrong; the other was the preparation of the soil. The soil must be prepared nicely." I think the ideal way as we found it in Wisconsin, if you are going to sow a piece of alfalfa and you can get at it early enough in the fall to prepare the ground give it a heavy dressing of manure, turn that manure under and let the land alone. Next spring go on it with the disc harrow and work it three or four times, as much as with a grain crop; get the soil in nice condition. The object of letting it stay in the winter is it firms the land and alfalfa delights very much in a firm soil, a good deal like wheat. Then go on and sow the alfalfa, about twenty pounds of good seed to the acre, with three pecks of barley if you want to get something for a nurse crop or weeds, and I can get more out of a nurse crop than out of weeds. Cut the barley early and let the alfalfa alone from that time on. If the weeds come up pay no attention to them. The next year three cuttings of alfalfa will kill the weeds. In addition to this, if you are in a section of the country where the bacterial condition of the soil is not favorable to alfalfa, get from some old alfalfa grower about three or four hundred pounds of soil and scatter it over the land when you sow your alfalfa in the spring.

Now, gentlemen, this alfalfa is a wonderful crop. With thirty-five pounds of corn ensilage and ten pounds of alfalfa hay I can almost close the circuit in a perfect ration and all I need as a keystone is just 50 per cent of the usual grain ration. My cows are going through the advanced register today on thirty pounds of ensilage and five to ten pounds of alfalfa hay, four pounds ajx flakes and one pound of ground meal. That is a heavier ration than I would feed if they were not going through the advanced register, but if I had no alfalfa I would be feeding from eight to ten pounds of grain ration a day, so the alfalfa enables me to cut down one-half the cost of my grain ration. Let me give you an illustration drawn from my own experience. I have a herd of forty registered cows. Last year from thirty-seven of them (that was the size of the herd) they gave me 7,499 pounds of milk, making an average of 425 pounds of butter or $101 worth of butter; counting the skim milk worth $16.20 per cow, the average would be $117.20 per cow, and the keeping cost me $34.25. Cast up the balance yourselves.

Mr. Winkjer: Does alfalfa fed to cows have any influence on the quality of the milk?

Gov. Hoard: Only to increase the amount. It produces no flavor or anything of that kind.

Mr. Ball: Have you a recipe you could give us to get good alfalfa? We would like to know how to get it.

Gov. Hoard: I can give you no answer to that except to say that it is a good deal like Christianity, it is exceedingly fine when you get it.

Member: What is the comparative value of an acre of clover and an acre of alfalfa?

Gov. Hoard: I will come at that from two standpoints. The alfalfa contains 11 per cent of digestible protein, and that is the element you always want; the clover contains 6.8 per cent, nearly one-half that. With the clover you do fairly well if you get two crops; with the alfalfa you can safely get three crops. The average production with me is over five tons per acre; the average production of clover is rarely more than two tons to two and a half tons per acre. These facts will answer your question. The feeding value of alfalfa is wonderful, wonderful. I have for several years kept my brood sows, from the time they were shut up in the fall until they farrowed in the sring, on nothing but alfalfa hay. I, like most of you farmers, found myself confronted with a great loss of young pigs, they were becoming weak and seemed to have very little hold on life. I began to reason on this thing, and tried to reason back to the roots of the thing. I found first that every little pig is a mass of protein. The original protoplasm is protein and so on up until you come to this little pig, and that mother is called on to produce from six to ten little bodies of protein and the farmer is not wise enough to give her the material to make it from, he gives her carbonaceous food, gives her corn, and the result is that the little fellows are weak, have not a strong hold on life. I changed this and my foreman was scared about it, said the sows were starved. I went away to Texas and he used to write me every week and finally wrote me and said, "I am astonished at the way the sows have thrived. They ate their ration of alfalfa every day and was given their drink, which consisted mainly of water; if there was a surplus of skim milk they got that but there was not much with all the calves and small pigs to feed. Those sows went through; that was my first year feeding alfalfa, and they gave me seventy-eight pigs; I reared seventy-five, fattened them and sold them, and from that day to this every fall I put my brood sows upon that ration and I have the strongest, most vigorous little fellows that I have ever had in my experience. So much for the feeding power of this forage, and everything eats it. Why, my hens are in the alfalfa meadow all the summer long picking alfalfa leaves and they are very fond of the leaves that are brushed off on the barn floor. If you take them and soak them until they are soft the hens will eat that alfalfa leaf. These things are given to us, as Paul says, for our understanding and I find myself a most earnest student of them because they are worth a lot to me aside from their financial value.

MR. NICHOLS: Are there not some of the alfalfa growers in Wisconsin that have alfalfa seed for sale?

GOV. HOARD: No alfalfa seed is grown this side of the Rocky Mountains.

Mr. Nichols: You prefer sowing your nurse crop around the first of August?

Gov. Hoard: That depends on your latitude. The latest I have ever sown was when I took off a crop of canning peas for the canning factory and sowed the first of July; they barely struggled through, but I understand from Mr. Wallace that you can sow here in August very favorably. You can grow alfalfa all over Iowa.

Mr. Haugdahl: What is the nature of your soil?

Gov. Hoard: A heavy clay on my farm fifty feet deep. Heavy clay and hard gravel. I have followed the alfalfa root down twelve feet.

Member: How long will you let the field grow alfalfa before you take it off?

Gov. Hoard: June grass gets in in six years; my rotation is a five-year rotation. Two years ago we had a very severe ice storm in March and it killed the clover and killed the alfalfa except the new seeding. I had about eight acres of new seeding that went through. Why I don't know.

Mr. Nichols: Will you tell the cause of blight in alfalfa in Iowa, as sometimes occurs?

Gov. Hoard: I think it is usually due to a lack of the bacterial content in the soil of Iowa.

Mr. Nichols: I put some bacteria in the soil but it blighted.

The Chairman: We have with us another student of alfalfa that wants to say just a word. Uncle Henry Wallace will say a few words to us and then we will close this discussion.

Henry Wallace: Governor Hoard has told you he traced the roots of alfalfa down fifteen feet, but that is nothing like the story I heard in Kansas. I was there one day and heard one man say he tracked it down thirty feet along an old well, another sixty feet, another 129 feet 6 inches, and they asked me what I knew about it, and I said I knew nothing but I had been over in Europe that summer and called at Lord Roseberry's place and saw the finest piece of alfalfa I had ever seen. I asked what that would yield and was told 650 bushels to the acre. On the way back I fell in with an Irishman and asked him to give me the four different meanings of the word aye. "Aye—I believe; aye, I am surprised; aye, I am astonished; aye—I am something of a liar myself."

But what I rose to say was this, Governor Hoard lives in Wisconsin and most of us live in Iowa, and on account of the quack grass and other fall weeds that come up you had better thoroughly work your land. You can grow early oats if you get them off by the first of July, then disc your land every week until your neighbors call you a fool, then disc once more and keep on that way until the middle of August, then sow your field and a nurse crop for the fall of the year and let it alone but it is difficult to get your man to prepare the ground thoroughly; the neighbors come along and laugh at him and he will quit. Prepare the ground long enough to get the weeds that come in the fall and in the spring killed; you want it so your wife can sow radishes or garden truck; then cover it lightly with seed, harrow it out and absolutely let it alone. Then the next year you can cut three times, but do not cut four times. We put alfalfa on the land south of town here. I told the man in June to put the brood sows in there but not to give them any corn. It is absolutely true you can keep sows on alfalfa alone. I said, "Put them on that and let them have alfalfa and put the pigs in this other field,"but he put eighty pigs to the acre on the first field, then eighty pigs to the acre on the other field, and they left it as bare as a barn floor and of course about half that alfalfa died. You can grow alfalfa on any ground fairly well drained in the state of Iowa. You can do that but the main thing is to have your ground prepared. The greatest trouble we have had is with blue grass white clover and I do not know whether we can overcome that or not. At North Platte we had a field of alfalfa of poor stand. We resowed it; when two years old I told the man to go and disc that until he could not see any alfalfa and he did so. My son was out there afterwards and he said I have ruined that alfalfa field. My son said, "I believe you have," but that was the best alfalfa we ever had. After it once get started you cannot kill it.

I am not an alfalfa crank and do not want you to be. You are going to have trouble and there are reasons why you should be a little careful and go slow. You will have trouble with curing it and you will have to adopt the governor's method of putting it up and sometimes you cannot do it that way, so go slow and use it for hog pasture. Put in enough brood sows to keep it nibbled back. Sow it and keep it mowed, then cut that up and let your brood sows have it in the winter; let your hens have it and then when you find you can do more, do more, but go slowly.

MR. SHOEMAKER: I would like to say a few words on a subject besides alfalfa. While it is not in keeping with the custom of this organization to decide at this time where you will hold your next annual meeting, I want to extend to you the heartiest invitation I can to come to Waterloo next year. This invitation I bring in behalf of the Chamber of Commerce and the Board of Trade in Waterloo, in behalf of the various manufacturers of creamery and dairy supplies of Waterloo, in behalf of the enterprising hotel people of Waterloo, in behalf of the dairy and creamery paper published in Waterloo, and in behalf of the whole town. If that is not strong enough, I will do what I can to get the W. C. T. U. and Sunday schools to join in the invitation.

Since you met with us last we have grown some, our hotel capacity is at least doubled and we are still building. I feel we are advantageously located for holding a meeting of this sort, have ample railroad facilities, and we assure you if you come to Waterloo next year we will do our best to show you the greatest convention you have ever seen, and when I say that I realize we have ''to go some'' to beat this.

MR. KIEFFER: As a member of this association I am very much pleased to hear this invitation extended from Waterloo to us to meet there next year. We have not had Waterloo make any claim for this convention for the past two years but I am glad that they are again in position to ask us to meet there. I can say that when we had our last meeting in Waterloo, I had the honor of being your secretary and that the committee that extended the invitation and made the promises to us carried out their promises in full and did more than we expected them to do, and I assure everyone here and can guarantee that if you hold a meeting there next year, being centrally located in the dairy district as Waterloo is, you will have one of the largest meetings this association has ever had.

THE CHAIRMAN: Gentlemen, permit me to thank you, in behalf of the Dairymen's Association, for your kind invitation. We well remember the cordial reception we got at Waterloo and I assure you that we will take the matter under advisement. We will now stand adjourned until this evening.

THURSDAY EVENING SESSION.

Meeting called to order at 8 P. M. President Barney in the chair.

THE CHAIRMAN: We will open our program with an address by Professor G. L. McKay, on General Dairying.

GENERAL DAIRYING.

PROFESSOR G. L. M'KAY, AMES, IOWA.

Mr. Chairman, Ladies and Gentlemen: I am pleased to be with you again at an Iowa convention, although I told your secretary when he asked me to address you that I would prefer to have the time taken up by some of our new men that we have not had the opportunity of meeting often.

It is the interchange of ideas that stimulates any industry and brings out the real pith. Very few people, I believe, outside of those directly interested, realize the magnitude of the dairy industry of this country. If by some chance a gold or silver mine were discovered in any part of this state the news would be flashed across the continent almost instantaneously and yet we might truly say that the man who owns an Iowa farm has a gold mine at his back door. The value of the dairy industry of this state alone is greater than all the gold and silver produced in the United States and Alaska annually, and the value of our dairy products, as a country, is one and a half times greater than all the gold and silver produced in the world and the bulk of the dairy products is made in seven states. Wealth may be defined as anything that administers to the wants or happiness of man and the ownership and possession of which may be transferred from one person to another. Its original sources are the sun, soil, air, water, plants, animals and labor. It is the task of the agriculturist to so manage these agents and agencies as to obtain the largest and best services for himself and fellows from them. The outcome of true culture is the exercise of intelligent purpose in the activities of life; and that in his occupation should stamp the farmer as the man of real culture.

When we look over the lists of the world's surplus products we find that farmers are nearly all doing the same thing. They are putting their surplus products in the same granaries of the world, and those granaries, or markets, are setting the prices for all. Prices in London, Denmark, Australia and New York are practically the same, less the difference in freights, quality and tariff, unless some shortage occurs. Cheap transportation has brought all civilized countries into close competition, particularly is this true in dairying. Butter, being a condensed product, can be transported to the leading markets of the world at very little cost.

While dairying is one of the most profitable agricultural pursuits, for some unknown reason it is not keeping pace, in this country, with the increase of population. Unless some radical changes take place we may be compelled in the near future to import butter and cheese to supply the home markets and this would be an unfortunate state of affairs, as there is no market equal to our own.

There is not a nation on the face of the globe where the laboring man is more able and willing to buy the best that the country affords than in the United States. This means that the demand is constantly increasing for high grade goods. Are we dairymen meeting the expectations of the consumers? I must answer this question in the negative. Basing my judgment on the quality of butter that I have seen during the past few years, in the various contests that I have had the honor to officiate as judge, I would say that our butter is slowly deteriorating in quality. So much so that we should call a halt and seriously consider this question. If by some chance the American tariff on butter should be wiped out and we had high prices, as at the present time, our markets would be flooded with foreign makes of high grade butter, and much of the butter made at home would not be able to hold its own in competition with the same.

The dairy business is in rather a chaotic state. You who have traveled over the great Canadian Rockies will remember that you came to a place known as the "Great Divide." Here a raise of 1,300 feet is made in ten miles and the trains have to be pushed up to the summit by three or four engines. Down the mountain rushes a stream, formed from the melting snow, which divides into equal parts, one part flowing on to the pleasant Pacific, while the other slowly works its way to the stormy Atlantic. No one looking on can fail to observe how the division weakened the force of the stream. Today I believe the dairymen of this country have reached this divide, so to speak. We find the centralized plants arrayed against the co-operative and individual creameries, and the individual and co-operative creameries are arrayed against the central plants. Thus the dairy forces of the country are divided and neither faction can see any good in the other.

What we need is united action and more intelligent methods. The dairy schools have been training men for years to the best of their ability, but these men are unable to cope with the existing conditions. I think I am safe in saying that 75 per cent of our buttermakers can produce first class butter if the raw material is all right. They may not be able to produce butter that will score 97 or 98, but they can produce butter that will score 93 or 94, and the maker who can do this will have no difficulty in holding his position. We have been for years, as it were, trying to purify the stream by working at the lower end when the source of contamination was at the head. The great work of the future must be done on the farm, not only in the use of more sanitary methods in the care of milk and cream, but the question of feeding, breeding and barn construction, as well as testing for the purpose of weeding out the poor cows, must claim our attention. The European countries that have made the greatest success in dairying are the countries that keep a number of field workers or instructors.

Last year our convention passed a resolution favoring a tax of .2 of a mill on every pound of butter manufactured in all creameries of our state. This tax would have given us a fund sufficient to have placed fifteen men in the field as instructors. Now I do not mean by instructors merely men who could go into a creamery and make a good tub of butter. No workman, no matter how skilled he may be, can turn out a first class article if the raw material is faulty. The kind of men we need at the present time for instructors are men who have had a thorough training along the scientific side of dairying as well as the practical side. We want men who understand feeding, breeding and who have a thorough knowledge of the best sanitary methods of caring for milk and cream. I would have such men inspect milk and cream as delivered to our creameries, then I would have them visit those patrons that were sending the poorest milk or cream and instruct them how to improve their goods. It might be necessary for a man to spend a few weeks at one creamery, but such work would have a lasting benefit on the community. There is no denying the fact that since the introduction of the hand separator the quality of our butter has greatly deteriorated. Now the hand separator is here to stay, and the sooner we adopt methods to meet these conditions the better it will be for the dairy industry. H. R. Wright, State Dairy Commissioner, and I took up a correspondence with the different creameries to ascertain their views about paying such a tax. Possibly about four-fifths of the creamery men responded favorably. Among this number were practically the best creamery men of the state. A few, however, opposed the proposition quite strongly, therefore we deemed it unwise to press such a measure. It is quite a common thing at the present time to find a variation in the price of butter from 1 cent to 3 cents per pound, therefore the fraction of .2 of a mill would be so small that it would not be missed by any creamery in the state. If the creameries are willing to contribute this amount the state should contribute an equal amount.

Place fifteen instructors in the state and divide the state into districts and I believe the work of these instructors would increase the revenue of our dairy industry from $5,000,000 to $10,000,000 annually in five years. To some this statement might be considered a great exaggeration, but in my judgment it is a very conservative estimate when you take into consideration the actual amount of butter, per cow, produced in our state. It is our boasted pride that we make more butter than any state in the union, but if this butter is not made at a profit it avails us nothing. Our agricultural resources are equal, if not superior, to any state or to any country. Why, do you know that in some of the European countries they are dairying successfully on land worth from $300 to $1,000 per acre? The difference is right here; they are dairying intelligently with good cows. Their average is nearly 300 pounds per cow, while ours is about 140 pounds per cow. We need a great awakening among the producers of this state along intelligent lines of dairying.

The test associations, for the weeding out of poor cows, have wrought wonders. These associations originated in Denmark some twelve years ago; since then they have spread rapidly over European countries, Canada and some of our own states. In Germany they have 67 test associations and their average milk production is 7,600 pounds per cow, or a gain of 1,380 pounds per cow in five years, or a difference in profit of $14.00 per cow. This is the result of intelligence. The milk production of Germany, where they have test associations, is a little more than twice the amount received by the average Iowa farmer per cow. An increased profit of $14.00 per cow would mean to Iowa an increase of over $14,000,000. We have in this state, it is estimated, 1,250,000 cows, therefore it is reasonable to suppose that at least 1,000,000 would be giving milk. It will be seen from the German statistics of the work of the test associations that their average butter production per cow was about 275 pounds. Thus at the end of five years we find that the yield per cow has increased from 275 pounds to 336 pounds, basing the test on an average of 3.80.

If our average is only 140 pounds per cow, then how much easier it would be to make an increase of 61 pounds per cow. It is not so much the question today of keeping more cows as it is of keeping better cows and caring for them intelligently. Possibly we do not have 25 farmers in the state of Iowa that keep a record of their cows and in so doing know what each cow is producing. That is, they do not know if she is simply a boarder or if she is bringing in profitable returns. How long do you suppose one of our business firms could exist if they carried on their business in such a haphazard manner? A great deal of discussion has taken place in our dairy and agricultural journals regarding the merits and demerits of the dual purpose cow and the so-called special dairy type. The more important questions should be what returns does a cow give for the food and care she gets? It is immaterial what breed of cows you get unless they are provided with proper shelter to protect them from the inclement weather and also provided with succulent feed they will not produce economically. All animals, man included, sooner or later, adjust themselves to their environment. This was brought quite clearly to my mind while visiting the Isle of Man a few years ago. The sheep in that rocky, almost barren country were about one-half the size of the sheep here. They had adjusted themselves to their country. They were especially adapted for seeking their living on the rocky cliffs. A cow is only a machine for transforming the rougher foods, such as corn, fodder, and other grains, into finer or finished products that we call milk and cream. The efficiency of any machine depends largely on the care and attention it receives. Therefore it would be absurd to expect a cow that was partly starved or fed on unsuitable foods for milk production, to compete successfully with a cow that was receiving proper care and attention. The Babcock test and a pair of scales have been recommended for years, as the only sure means for determining the value of a cow, but I maintain they are not the only requisites.

When the Good Master came to the fig tree and found no fruit He did not condemn it, but gave it another chance under better conditions, and then if it did not produce fruit it was to be hewn down and cast into the fire. Therefore, before we condemn a cow we should be sure that we have done our part. We might say it is largely a question of the man behind the gun. This reminds me of a little incident that occurred while traveling through Germany some years ago with a professional violin player. One day we had occasion to call upon an old German farmer and found him with his son trying to produce some music upon an old violin. After listening to him awhile my friend took the violin and played as only an expert can, when the German suddenly exclaimed, "By shiminy, that violin is worth five times as much as I thought it was." I presume many farmers have felt the same after disposing of a cow to some one who, by care and attention, has developed all her powers. When Denmark changed from a beef-producing country to a dairy country, because dairying gave them greater returns than they were getting from beef production, they did not sell off all their cows and buy new ones, but built up their herds by using good dairy sires. In many cases the farmers of a community clubbed together and brought in good sires. It is needless for me to say that the results obtained in that country showed the wisdom of their course.

We do not need to go to Europe to find the possibilities of good dairying, as we have herds in this state that are making from 300 to 400 pounds of butter per cow, but these men are following up-to-date, intelligent dairy methods. Mr. Gillett of Rosendale, Wisconsin, told me a few weeks ago that one of his famous Holstein cows would give over 1,000 pounds butter fat in ten months, thus breaking all previous records, and he has a number of other cows in his herd making marvelous records. This is only one instance of the many that I might quote showing the effect of intelligent feeding, breeding and caring for a herd. While we boast of the great dairy resources of our state, it must be admitted, to our shame, that our state has done less to aid the dairy association in developing the dairy resources of our state than any state in the union, that makes any pretense of dairying. The chief reason that this convention is held in Des Moines, outside of the fact that it is an ideal city for such a purpose, is that your commercial club was able to aid the dairy association financially, thus making it possible to hold such a meeting. This organization depends entirely on charity, or contributions from the public. Our secretary is actually compelled to seek aid from the commission men of New York, Chicago, Philadelphia and other cities and the supply men of the country, to furnish him with sufficient funds to hold a convention in the state of Iowa. Practically all our neighboring states are receiving from $1,500 to $2,500 per year and this enables them to rent halls, take in speakers from other states and to give premiums without compelling makers to contribute a tub of butter if they wish to exhibit. This association should be in a position to hold one or two meetings every year and to hold them in parts of the state where they would do the most good, regardless of the population or contributions that might come from any city. An organization that represents at least $40,000,000 annually should not be an object of charity.

I am not a politician in any sense of the term, but I would say that if the dairymen expect to get aid like other states have they will have to organize in every county where dairying is carried on, and not only organize, but let their wants be known to their representative. The lack of organization is manifested everywhere among dairymen. When the present dairy standards in the new pure food bill were prepared it was not considered necessary to consult a dairyman of the United States. A few chemists got together and formulated the present standards. If such standards had been enforced it would have meant a loss of hundreds of thousands of dollars to this state alone. State Dairy Commissioner Wright, with a few others and myself, had the temerity to go down to Washington and enter our protest to Secretary Wilson against the enforcement of such an unreasonable standard. It is a good thing for the farmers of this country and the dairymen, especially, that we have such a broad, liberal-minded statesman holding the chair of secretary of agriculture. Secretary Wilson deserves the thanks of all the dairymen of this country for the stand he took in their behalf.

The Creamery Journal and New York Produce Review also deserve the thanks of the dairymen for the stand they took in regard to the butter standards. While government aid is beneficial, we must not look entirely to it for support. You have all heard the story of the farmer and the lark. How a mother lark hovering over her little ones whose nest was in a field of grain heard the farmer say to his son, "We must get Mr. ——— to cut this field of grain." The lark heard, but paid no attention, but some days after this she heard the farmer say to his son, "We must cut this grain," then she proceeded to remove her brood to new quarters at once. So whenever we want to make a success in any line of business we must apply individuality and create enthusiasm and the business will succeed then, and not until then. Too many of our creameries lack individuality or are run on the Rip Van Winkle plan. The buildings are dilapidated and the buttermaker twenty years behind the times, or in other words they are dead and are just waiting for the bug-a-boo man, the central plant man, to come and perform the last funeral rites. This reminds one of a little incident that occurred in one of the western towns. The people had worked up quite a lot of enthusiasm about building a fence around their cemetery. The mayor of the town called a meeting of the citizens in regard to the matter of funds and some discussion arose as to the amount necessary. A little Irishman got up and said, "Does yer honor know of anyone in this cemetery that wants to get out?" and the mayor answered "No." Then he said, "Does you know of anyone out that wants to get in—if not, then what is the need of a fence" When a creamery is run down and all life seems gone it is dead to the public and there is certainly no need of a fence to keep the public out. A mistake that many of our co-operative and individual plants make is in not painting the buildings and keeping things up-to-date and letting the public know that they are alive. In appointing directors it is well to select men who have made their own business a success. Another important point is that the secretary should insist on having a weekly report from the buttermaker, showing the amount of butter fat received and the amount of finished butter made, thus keeping tab on the business continually. I have a letter in my pocket at the present time from a maker asking me to explain why their creamery did not get any overrun during the month of August. The only information the writer gave me was that they were using a Disbrow churn. Now how could such a creamery compete with one that was getting 18 or 20 per cent overrun and some a little more? Now, this is the kind of business that is forcing some of our co-operative creameries to the wall. It would be utterly impossible for anyone to make butter and not have an overrun if accurate work was done in testing and weighing, as the majority of you know that the Babcock test merely gives the butter fat. In the finished butter we have from 10 to 16 per cent water and from 1 to 3 per cent salt and from 1 to 2 per cent casein or curd, therefore we must have an overrun. A good, well-regulated co-operative creamery that makes from forty tubs per week and up can and should be able to pay more than any other concern. Two things are essential for the success of any business—quality and quantity—and these are the important factors that makers and directors must look after if they wish success.

ADDRESS.

MR. FRANK L. ODELL, ASSISTANT DAIRY COMMISSIONER.

Mr. Chairman, Ladies and Gentlemen: We hope this thirty-first annual convention will go down in history for being one of the best of its kind ever held; to be remarkable for its exhibit of butter and creamery supplies; remarkable for its educational features and record of attendance; that each and every year these meetings may excel the others; that peace, harmony and good will may abound; that it may continue in that high class manner so that every buttermaker, creamery man, supply man, commission merchant, transportation agent may look forward to the coming events of the Iowa State Dairy Association to be one of the crowning points in their lives.

This is not an imaginary picture, but a real live issue, an issue that has the heart and soul of the institution at stake.

Do you know I feel just about as good as a fellow of my size is allowed to feel?

Just to think, we have tubs of butter on exhibition at this convention Who says, "What's the matter with Iowa?" Who says, "What's the matter with Iowa buttermakers?" I say they are a great, loyal set of fellows and they have expressed their loyalty by sending to this convention tubs of butter, which has almost eclipsed any previous record of the Iowa State Dairymen's Association.

What would this convention be without the buttermakers? What would this convention be without the little twenty-pound tub, the contents of which is a "free gift" to the maintaining and sustaining of this institution and represents from the giver the art and skill of his handiwork. It also represents labor and toil, which goes to make up one of the chief industries we have in this great state of ours.

Do we appreciate these things? Do we appreciate the fact that the buttermakers of Iowa have helped sustain this institution for thirty-one years, and without the aid of one cent from the state?

The legislatures in some of our sister states helps to sustain their dairy associations, but Iowa has nothing of the kind. And in view of these facts the Iowa State Dairymen's Association has a goodly sum of money in their treasury, which partially represents the "loyalty" and "generosity" from the buttermakers of Iowa. I say again, do we appreciate these things? If we do let us show them that we do; let us cheer them on to victory. Usually about all the praise mortal man gets here below is when the last sad rites are being paid over his funeral casket, but here today we have the living with us. If we are ever going to pay them homage let us do it right now, here in this convention hall.

Inspiration is the stepping-stone to success. If we are inspired with our work, no matter in what vocation of life it happens to be, the chances are 3 to 1 that we will succeed. And where there is union there is strength. Now, if we are inspired with our work and every buttermaker, creameryman and dairyman would join hands and say, we are going to work together, to further the interest in dairying, we could elect the next legislature. If everyone who is interested in dairying would join hands and stand at arms length we would have a circle that would reach nearly around the state. What an army there is of us.

Are we going to keep abreast with the sweeping tide of progress? Are we going to keep alongside our sister states in the advancement and building up of our dairy interests? Then let us all get into the boat. There is an oar for every buttermaker, there is an oar for every secretary and dairyman, there is an oar for every one who wishes to help "build up" one of the greatest industries we have in this state of ours.

I wish to pay a compliment to a few of our senators and representatives who have stood by the dairy department in time of need, and through their effort we are thankful for what we have, but we want the big majority of them on our side.

Iowa's dairy department has an annual appropriation of $20,000; it should be $35,000; then we could get an addition to our force. We also should have $1,500 for the support of the Iowa State Dairymen's Association. We often read and hear it remarked, "What's the matter with Iowa?" the state abounding with beautiful homes and thriving cities, a land of plenty and luxury. But if one should ask what's the matter with Iowa and her six hundred creameries our loyal pride and ambition would take a jolt.

The rank and file of Iowa's loyal creameries and dairymen are trying hard to guide the ship over rough seas and milky waves to a harbor sheltered with more dairy laws, but legislation is indifferent to her dairy interests. That's whats the matter. Why not say, what's the matter with Iowa's legislature relative to her dairy interests? A state that manufactures nearly 100,000,000 pounds of butter and brings into her coffers nearly $28,000,000 each year, with its 600 creameries and only two inspectors to lend their help and assistance to build up this great work. It is plain to be seen what the matter is.

Committees have frequently met with this honorable body and pleaded for their cause, asking for more money that the dairy department might be strengthened, and, useless as it may seem, there is still hope.

If the creamerymen and buttermakers in the state would put forth every effort to try and elect men at our next legislature who will support us and be in favor of voting for larger appropriations for the dairy department, we could show what's the matter with Iowa. Commence agitating the question now. We want to be leaders, and we can be leaders if we could get the support.

In 1908 we have the next primaries. Previous to these creamerymen and buttermakers should ascertain whether or not the candidates for election are friendly to the dairy interests, and if so, pledge them their support. If they seem indifferent defeat them if possible. Dairymen should be recognized and they will be if they go after it in politics.

To carry on this work it is necessary to have funds. If every creamery in the state would contribute $5 to $10 each, employ a man to look after this work, to secure the name of every man who patronizes a creamery, circulate printed matter calling attention to the need of more dairy inspectors to visit the farms, then go to the primaries and vote for the men that will support them in the next general assembly we might be able to get the needed appropriations.

Representatives are elected to represent the people and if the people ask for this class of legislation they will be apt to get it. If they do not ask for anything it is certain they will get nothing.

A great many creameries are asking for inspectors to come and stay with them three or four days, go with them over their routes to help get a better quality of cream. This is exactly what should be done. It is the beginning at the foundation of the whole evil. This is impossible with the present force. If this was done we would not get around once in five years to all the creameries.

Iowa should have more inspectors; without them we can do no more than has been done. In union there is strength, and if we unite ourselves in one common cause we will have a very different answer to the question, "What's the matter with Iowa?"

The value of thought brings us in touch with another question. We have a number of creameries that you might call weak creameries. They represent a part of the number we have on the list. These creameries are in need of help. Help to bring them up to a more solid working basis. The point is, are we going to give them state aid? Aid that will bring them up to this basis. The present force is not strong enough in numbers to spare the time. The state of Minnesota has nine inspectors and Wisconsin has about the same number. Iowa should have at least six, then we could commence to show you improvements in Iowa butter. If we could improve the value of our butter one-quarter cent a pound it would mean $250,000 a year; if we could improve it one-half cent a pound it would mean $500,000 a year, and it has been estimated that the loss from poor grade of cows and the loss from poor grade of milk and cream delivered to the creameries brings up the grand total to five or six million dollars a year. This includes all the dairy states.

The question now before us is this: Would an investment of a few thousand dollars, in addition to what we have to put an additional force in the field, bring results that would be beneficial?

I may be overenthusiastic in this matter, but I want to see Iowa at the front. Even if this convention does not take any action along the topic just discussed it may bring the thought forcibly enough among the creamery and dairymen to ascertain if the candidates for the next election are friendly to our interests.

I have made a few trips in the rural districts to find out the conditions and it is enough to satisfy me that two-thirds of the trouble resulting from low grades of butter is from the cream coming from unclean places and from dirty and unwashed separators. I have found hand separators that were so filthy dirty and the place where they were kept so cussed rotten that I would compare an old "swill pail" and a hog pen a decent place besides them. Tell me how a buttermaker is going to make good butter from this kind of "stuff." I call it "stuff" and I think this is a mild definition for it, and to add more fuel to the fire there is always some fellow that will buy stuff of this kind, and the fellow that sells it has no inclination to clean up, nor will he until forced to by some inspector or some one who has authority.

I want to say a few words in regard to "creamery records." It is very essential that the buttermaker keep a daily record of his work—essential in more ways than one. A buttermaker that keeps a record of his everyday work is one of the successful ones.

The one thing I want to impress upon the buttermakers is to test every churning for moisture or butter fat, mark every tub and keep a record of it. The government inspectors are taking samples of butter everywhere, in the markets, in the cars or any place they can find it. These samples are tested for moisture and if found in excess of the law you are asked to dig up. If you do not have any record of this butter all you can do is to "look wise" and do as "Uncle Sam" tells you.

On the other hand, if you have tested this butter, got a record of it, put the date the butter was made on the tub and the number, you can say to Uncle Sam, show me. Ask him to tell you the date that butter was made and the number of the tub, and your record will go as far in court as the other fellows. If you have no records you will be like the boy that lost his dog. When asked to describe it he said he could not. It was just a dog.

There are a number of different methods on the market for testing butter and every creamery should provide for one of these and see that their buttermaker keeps a record of every churning. If he should have more work than he can do give him more help. It will pay you to do this. It may save you a fine of several hundred dollars or it may make you several hundred dollars, for when the buttermaker commences to use the test he may find he is not incorporating enough water and by its daily use may increase the overrun 2 or 3 per cent.

I would like to urge more of the buttermakers to join the scoring contest. If you are having trouble to keep your grade up we want to know it.

Possibly we could help you. At any rate, seeing the butter once a month would give us a better idea where to work.

Covering as much territory as we have to, it is impossible to call on all the creameries as often as we should.

THE CHAIRMAN: We put the buttermakers off this afternoon and I have an apology to offer them for not having announced the scores, and in view of that fact I think we had better take that up now. Mr. Johnson will read the scores at this time.

Whole Milk Class—A. M. Whitney, Whittemore, Iowa, 97½; G. A. Newell, Irvington, Iowa, 97¼.

Gathered Cream Class—Watson Schech, Volga City, 97; A. M. Franzen, Lynn Grove, 96.

Educational Scoring Contest—F. W. Stephenson, La Mont, first, coming nearest to the official score.

Our worthy vice president also wins second in the scoring contest and third place in the whole milk class with a score of 97⅛.

THE CHAIRMAN: We will now listen to Mr. W. C. Taber, of New York City, on "The Past and Present Methods of Quoting the New York Butter Markets."

PAST AND PRESENT METHODS OF QUOTING THE NEW YORK BUTTER MARKETS.

W. C. TABER, NEW YORK PRODUCE REVIEW, NEW YORK.

Mr. President and Members of the Iowa State Dairy Association: If I understand correctly the invitation of your secretary, it was not that I should attempt an exhaustive discussion of the relative merits of any particular methods of quoting the butter market, but rather to talk to you in the most conversational manner as to how values have been, and are now, established in the great market of New York, where two to two and a quarter million tubs of butter are sold annually.

Permit me, however, to suggest that you are vitally interested in the matter of quotations—how they are made, by whom, and their reliability at all times—as they affect the relations between the producers and distributers of a very considerable part of the butter product of this country.

The old idea that quotations of any article should represent as nearly as possible the real selling value has lost none of its force, and whenever there is any deviation from that path the situation should be so fully explained that no one may be deceived; and even then I question the wisdom of making merely a settling price for the convenience of the trade, which at times will be widely at variance with the rates that buyers would willingly pay over the trier.

It may be interesting to trace back a little of the history of market reporting in New York. In 1855 the American Agriculturist began publishing a brief report of the produce markets under the direction of Solon Robinson, who made a personal canvass of the market once a week. A few years later the work was transferred to Clarkson Taber, who enlarged the scope of the reports, and shortly afterwards started a similar department for the Tribune. In 1858 Benjamin Turner began the publication of the Producer's Price Current, issuing one edition a week, and almost from the start this little sheet found its way into produce circles far and near. As the years passed buyers and sellers alike came to look upon these quotations as a clear index of market conditions, and they were sent to shippers in all parts of the country. In 1882 the Price Current was made a daily publication and the work of reporting the markets passed into the hands of younger men who had been in training, and the high standing of the market report was not only maintained, but because of the accuracy of the prices quoted therein it became the basis upon which a very considerable part of the wholesale business was done. The convenience of using these figures for settlement with the creameries, as well as with the buyers who were distributing the product to the consuming trade, was recognized and in this easy way of doing business may be found one of the steps that led to the destructive premium system which has been such a stumbling block to the trade.

But changes were coming in the methods of distribution and rapidly the business was drifting from commission to merchandise. The men who were buying or contracting for the goods felt that however much dependence could be placed upon this published report of the market, there was too much at stake to leave the matter entirely to the investigation and judgment of any one man. Along with this was the apparent need of establishing a price early in the day, as the jobbing trade had come to depend upon a quotation for the settlement of both their buying and selling prices. The next step in this movement was the appointment by the New York Mercantile Exchange of a quotation committee composed of eleven members of the Exchange, and later increased to fifteen. It was my privilege to be a member of that committee, with a voice in all its discussions, but not a vote.

For four years quotations in New York were established by that committee. The record of its work is so well known that no extended review is necessary now. During the first year the figures given out each day were very closely in line with selling values, but as competition in the trade became stronger and the premiums paid shippers increased a tendency to more conservative quotations was apparent and by slow but sure steps the committee drifted away from the current selling prices on the street to a merely settling basis. Sometimes this was a rate at which the finest goods could be bought on the market, but more generally one-half cent, and at times one cent or even more below what buyers had to pay. You will recall the fact that when you picked up your morning paper to see what the market for butter was in New York you would read: "Official price 25 cents; street price, 25½ to 26 cents." The daily press gave their reporters notice not to follow the official figures only as they reflected the actual situation, and the Associated Press wires included both the official and street prices.

Now the men who made these quotations had not the slightest intention of being dishonest. Under the peculiar methods of doing business they felt justified in fixing quotations in accordance with the premium system under which they were working, and in most instances the shippers of butter got every dollar they were entitled to. Some of us knew the system was wrong and we could not therefore get reconciled to it. But the persistent underquoting of the market finally aroused the jobbing interest, which is equally as strong on the Exchange as the receiving interest, and the opposition to these methods culminated in the famous Martin suit, a supreme court injunction restraining the Exchange from issuing quotations that are not based upon actual selling values, and the disbanding of all quotation committees. These steps followed in rapid succession and they left the trade in almost as chaotic condition as was this old world when the Almighty called it into form. Immediately on the suspension of the official quotations the work was taken up by the reporters who had previously had the matter in charge and the Producers' Price Current again became the recognized authority on the market.

But I would not pass from the methods that were in vogue during those four years without saying that I believe it quite possible for a representative committee to quote prices every day of the year in accordance with the spirit of the injunction. It is reasonably easy for any well posted operator to *know* what the market really *is*, not what somebody *thinks* it is or *ought* to be, and when personal interests, spite, jealousy and unfairness are put aside right conclusions must follow.

Turning from the work of the quotation committee, which ceased on August 12, 1907, when the supreme court injunction went into effect, let us consider briefly the system which is now employed. If you will kindly forget the part that I have in making these quotations I will take you around the market and show you how the reporter digs out the information that is needful to a proper understanding of values.

It is Monday morning and the closing quotation on Saturday was 30½ cents. The reporter joins seventy-five to one hundred of the receivers and jobbers of butter at 10 o'clock on the floor of the Mercantile Exchange. The receipts of the day as posted on the bulletin are studied and frequently information as to whether the stock has arrived and is ready for delivery is obtained from the fast freight line agents, most of whom have just come from the unloading depots. Telegraphic reports from other distributing points and country markets are read and their influence on the position here weighed carefully. However big we may consider ourselves, it is safe to say that no important market can run long without being influenced to some extent by what is going on at other points. Then follows a discussion as to the situation, the force and character of the demand, advices of supplies in transit and the prices at which buyers and sellers are willing to do business. When trade is moving along smoothly the demand absorbing the available supply, quite early in the day, it is clear that there will be no change in quotations. This was the concensus of opinion by those who were on 'change that morning, and by eleven to eleven thirty the reporter starts down the street, visiting anywhere from fifteen to thirty of the stores to see whether buyers are taking hold, and if the early impressions of the market are borne out by actual trading. He meets perhaps a dozen buyers and is shown tickets of purchases, some with the price left open, but with the understanding that it will be whatever is quoted, and others at a definite price. By twelve thirty or one p. m. there is no longer any question about the market and the reporter goes to the office, prepares his copy for the printer, and between two and three o'clock the Price Current is ready for distribution.

Tuesday morning the posted receipts are heavy and the tone changes a little. In a half hour the reporter is accosted by four or five of the largest buyers with a query as to "How it looks," "Do you think there will be any change," etc. He has already found a slight difference of opinion among the receivers, so his reply to the buyers is, "I wish you would see the men from whom you usually get your goods and then come and let me know what price you can buy at." In a short time they begin coming back and all have the same story to tell—"we can buy easily at yesterday's price, but no less." Later investigation on the street develops the same situation and the quotations are left unchanged.

Wednesday still shows a little unsettled feeling, which become more pronounced on Thursday, when it is seen that stock is not selling up as closely as before, and on Friday evidences of weakness come to the surface. Most every one argued, however, that notwithstanding the high price the future of the market looks good. Saturday is a short business day. Merchants as a rule do not expect large trading and they are anxious to get their letters out of the way as soon as possible. "Let it go unchanged for the day," was the talk up to ten thirty a. m., when a large receiver joins the crowd on 'change and at once advocates a decline of one-half cent. "I have accumulated 1,000 tubs of fine fresh butter within the past four days and I'll sell specials at 30 cents to any one," was the way he went at it. "Do you mean that?" said another prominent receiver. "I certainly do," was the reply. "Then I'll follow, who will buy specials at 30 cents?" In five minutes everything had changed. The price had broken one-half cent and the reporter recorded the fact at once.

It is Monday morning again, receipts are still heavy, plenty of stock left over and everywhere there was pressure to sell. "Better ease off another one-half cent" was the first suggestion, and it found so general favor that receivers determined to try it out on that basis. But the market did not work right, and the next day about a dozen operators got at the reporter and insisted that he should cut the quotations one cent and so declare his purpose at once. Then followed a half hour of hot discussion. The reporter maintained the position that he was not *making* the market, that it was not his province to quote a lower price until receivers were willing to sell. Over and over again he asked the receivers if they would sell at 28½c, and the reply came back, "yes, if you quote it," which was an unsafe proposition for the reporter to stand on. "I am offered my selection at 28½c if you will quote it," volunteered several buyers, to which reply was made, "buy your goods, show me the tickets and I'll know what to quote." The situation was so unsettled that the reporter had to go down the street with the price left open, to be determined by actual business, which later, left no doubt of the market being one cent lower than the day before. This decline seemed to be sufficient for the moment, and for the remainder of the week the reporter could find so little variation in the transactions that he felt justified in maintaining the quotation of 28½c. But subsequent events proved that these few days were but a lull before a fiercer storm.

Another week opens with the most conflicting opinions. It soon leaked out that two or three big houses were getting carload after carload of consigned goods from a western market, financial matters began to play an important part, and new and unlooked for elements were thrown into the market, which caused a feeling that something serious would happen. From the start values began to tumble. Open offers to sell at 1c decline soon convinced most receivers that unless quotations were lowered at once buyers would refuse to operate beyond the most pressing needs, and no one was in humor to accumulate stock on which not a dollar could be borrowed from any warehouse or bank in the city. Now for the part that the reporter had to play. He was taken aside by a prominent receiver and this sort of advice was gratuitously given: "You occupy a position of great importance just now. Whether you like it or not, you are no longer merely a commercial reporter. Your work is so closely linked with our interests that you must take a broad view of the butter situation and not be governed solely by the business of a single day. Whatever you do, always be on the conservative side of the market." Sounds like good advice, does it not? But why should a reporter lean to either side of the market? What possible excuse can he give to any fair minded man for ignoring the bulk of the daily business, and to make an arbitrary quotation because he or any considerable number of operators feel that it will be the best for the trade? Market values like water sooner or later will find their own level, and the controlling factors in the final analysis are the supply and demand. The moment a reporter fails to have important transactions on which to base his quotations he is as helpless as a ship in a storm without a rudder or compass. To get at the actual business is the reporter's most difficult task. Thirty years of the closest acquaintance with the trade has placed him in possession of the best sources of information, but at times the most reliable merchant does not care to open his books or give away certain information that is so essential to a correct understanding of the market. Besides, some men will lie, and their names are not always on the black list that the reporter carries in his vest pocket. A few staunch friends—men who are doing business every day and who are honest to the core—have to be relied on when other avenues of information are temporarily closed. But, I have not completed the story of that eventful week. The quotation of 27½c, which was made on Monday, held only a day or two, then there was a drop to 26½c, later to 25½c, and on Saturday to 25c—a slump of 3½c a pound for the week, or a matter of $2.10 a tub.

I fear that I have wearied you with so long a recital of the way quotations are now made in New York, but I want to assure you that every effort is being made to represent as nearly as possible the open wholesale prices of all grades of butter.

Whatever criticisms may be hurled at the reporter, any fair minded man will recognize that it is the reporter's duty to reflect the market after it has been made by actual business; that the receivers can and must determine the prices at which they are willing to sell butter, and in this way make a market which the reporter must quote. There are special channels into which some stock will go at an advance over the quotations no matter what figure is given, but the price at which large buyers can secure supplies on the open market will hereafter be the basis of the quotations. And let me say to you, farther, that this system of quoting gives fuller recognition to fancy butter. Already there is a noticeable discrimination in quality, and this will gradually become more pronounced.

Buttermakers of the state of Iowa, you will now have a greater incentive to make *fancy* butter. Go back to your creameries from this convention with the determination burned deep into your souls that you will raise the quality of your product to a higher standard.

MEMBER: I want to ask if there ever was an agreement among the commission merchants of New York to return any premium?

MR. TABER: There never has been any agreement between the commission merchants regarding that matter.

THE CHAIRMAN: It has been suggested that, in recognition of the services rendered this association by Mr. Jules Lumbard at various times for the last twenty-five years, he be made a life member of the association and a gold medal properly inscribed be presented to him. I would like to hear from you on the subject.

MR. S. B. SHILLING: I do not believe there is a member of the Iowa Dairy Association that does not appreciate what Mr. Jules Lumbard has done for us in the past and I want to say to you this, that while I am in favor of the gold medal that our president has suggested, and the life membership which I know would please him, I know that Mr. Lumbard is in straightened circumstances financially to-day, and he needs something more than a gold medal and a life membership in this association. Now I speak with actual knowledge on the subject and it seems to me it would be a pleasure for the members of this association to individually make a contribution of what they can afford to go to this man. If there has ever in the world been a friend to this association Mr. Lumbard has been, and I know I will not have to stand here and plead in vain for a small contribution from every one of you to give him. If I did not know the circumstances of the gentleman and was not positive of the statements I make to you, I would not make them in this way. Inside of the last year he had a benefit given him in the city of Chicago by his old friends, and he has not a dollar in the world excepting a small pension from the Pennsylvania road to support him to-day. He has none of the luxuries of life, simply enough to live on and it seems to me, in recognition of the services he has rendered to this association, we should give him something more substantial than a gold medal and a life membership in the association.

Just one thing more I want to say. This has been recognized by other states, and two other states, at least, during the last year have done what we should have done before they did, because he first recognized the state of Iowa, but two other states have made this contribution at their annual convention.

THE CHAIRMAN: I am quite in accord with doing just as Mr. Shilling has suggested, but I also think he should have the gold medal and the life membership and I will entertain a motion to that effect, if some one will offer it.

MR. SHILLING: I had not thought of any plan, but I move, Mr. Chairman, that the association vote to give Mr. Jules Lumbard a life membership in the association along with a gold medal, and that we individually contribute to the amount that we feel we can give in a voluntary contribution to him.

Motion seconded by Mr. Wright and unanimously carried.

A collection as taken up which resulted in a sum close to $100 being taken up for the benefit of Mr. Lumbard, and Mr. S. B. Shilling was appointed to present the purse to Mr. Lumbard.

THE CHAIRMAN: We are fortunate this evening in having with us President Storms, of the Ames Agricultural College, who will now address you for a few minutes.

REMARKS.

PRESIDENT STORMS, AMES, IOWA.

Mr. Chairman, Gentlemen of the Association:—I have not the faintest idea why my friend Mr. Wentworth should have laid his hand on me when I entered the room a few minutes ago and threatened to bring me here before you. I am sure it could not have been a malicious purpose as I call him friend and still believe he is a friend. I did feel a little bit strange in this company until just this moment, but the taking up of a collection makes me feel quite at home. For several years I have faced audiences from this room and from this platform, but never a better looking audience than this, never one more intelligent, never apparently one more righteous, never one more in earnest. Naturally I ought to feel at home and then I have somehow a very deep interest in this association and the interest there which you will understand because I was born on a dairy farm and I have been connected with one at long range ever since.

You are dealing, gentlemen, with one of the fundamental and growing and important industries upon which our civilization and prosperity depends. I have had the fortune, good or ill, of falling in more or less with men who are interested in the financial situation and I am always glad to realize that our prosperity and our success does not depend upon the fluctuating markets of Wall street, but it does depend upon the farm and upon the interests largely which you represent who are gathered in this association tonight. Possibly in just four minutes, for I understand that is my limit, I may be allowed to suggest to you that we have a double interest in your association and in you personally. We are connected at Ames with college and with station interests, and if there is any man who ought to be widely concerned in the affairs of the world it is the man connected with educational work. They used to say to me that a lawyer needed to know two things, viz., the law and everything else, and an educator, especially if he be interested in the newer developments of educational work, needs to be in touch with two worlds, the world of intellectual interest and the world of industrial interest. We never could live, we would be in a vacuum at an institution like the one at Ames, were it not for vital and constant and ever increasing of important relations with the industrial people and industrial interests of the great state with which we are connected. It is our business to take the choicest product of our homes, the boys and girls, and in their education, we trust not in any way inferior in quality or in extent to that which is given in any institution, to so lead them in their educational work that they shall have an intelligent interest in the industrial affairs of the world in which they must live; and it is gratifying to know that when young men and women go out from that institution and others like it they find a place ready for them in the world of affairs. Industrial efficiency is the key word of our school for as we shall be able to progress in the actual industrial efficiency of the individual man and woman, too, shall we be able to keep step with our own progress in other respects.

We are educating all the time to wider and more varied interests that require wider ministry. Every man in the humblest home today has needs, such as he considers needs at least, which would have been luxuries to his grandfather, and your children have needs which to you are the greatest of luxury, so we must have a like advancement in industrial efficiency so there shall be ability to meet the important needs.

You in this association are aiming to increase the industral product of the acre, the industrial efficiency of the boy and man and the girl. You are working at two problems just as we are. We want to keep in close touch with you, with your homes and with your interests. We want our young men and young women to be in close contact with the problems with which we are dealing. We aim to have it so and are glad to know when it comes to matters of contest in school and knowledge and application of knowledge, that the student of the college is not second to any. We are glad to have this affiliated relation. We want your interest and support and we want your presence whenever you can give it to us. We are engaged in many phases of the problem in which you are interested, and we want you to know, while you do not always understand just what we are aiming at, we are trying to do something nearly the same as you are and hope sometimes to hit the mark.

I am very glad, indeed, to have this very pleasant privilege of meeting you men. Some of you I recognize and others I do not, but not so much personally as the fact that I do happen to be connected in a sort of way, as the head janitor, you know, with the institution which is your institution and which is interested in the same problems with which you are dealing.

Mr. Edwards: I spoke to you this morning about this division of the state into different sections and the appointment of local secretaries in the different divisions. I promised to bring this up later on, after you had time to consider the matter. I am going to leave it to the association as to what to do. If you feel it is the proper thing to do, you can appoint a committee to make this division and allow your secretary to appoint the local secretaries, or follow any plan you desire. I would like to hear from some others in regard to this.

THE CHAIRMAN: If any of you think this is a good plan and will authorize your board to do something with reference to this matter I think it can be attended to through them, if we have not the time to attend to it tonight; or possibly it might be well to bring it up in the morning. Has any one any suggestions to offer?

MR. KIEFFER: With relation to these district meetings, as the members present at this meeting are not in position to name officers for these different districts, I believe it would be best for us to leave this at the present time with the executive committee of the Iowa State Dairy Association, they to select the officers for the different districts, and I beg to offer that as a motion.

Motion seconded and carried.

THE CHAIRMAN: Now we will have just a few words from Mr. Shilling before we adjorn.

REMARKS.

MR. S. B. SHILLING, CHICAGO, ILL.

Mr. Chairman, Gentlemen of the Convention:—I feel as though it is almost an imposition for me to stand before this audience, which has been here for such a long time today, but if you will give me five minutes I will say all I want to and quit.

There are two things I want to bring before you this evening because they are matters of importance; important to you and important to the dairy interests and to everybody connected with the dairy industry.

The first I want to speak to you about is the oleomargarine situation, and I will only say this about it to you: You know the situation as well as we; you know the high price of butter has aroused a feeling of antagonism to the law that has protected us. So strong is this feeling that a movement has been started in the Retail Grocers' Association for the purpose of securing a repeal of our law. I was called before the officers of the association this last week and was questioned in regard to the matter and warned at last that they had taken measures to appoint a man to go to Washington during the present winter, for the purpose of securing a low tax or an original package. I want to say to you on that score, do not forget the National Dairy Union, because we are capable of protecting your interests in the future, providing you stand back of us, as you have in the past. I am positive of my position when I say this to you, because we know our strength and the backing we have in congress, but we have to have you back of us to prevent any action being taken.

Another thing I want to bring before you is the National Buttermakers' Association. We have a common organization and it seems to me as though it would be almost useless for me to stand before an audience of buttermakers in the state of Iowa and urge them to be loyal to their own institution. I believe it is unnecessary to do that because I feel that you are going to stand by it.

Our convention is in March, at St. Paul. St. Paul has offered us $4,000 to come there with our next convention, and if we accept that $4,000 we will have to reciprocate something. Where they are so liberal as to offer us in cold cash $4,000, we owe them something in return. The National Creamery Buttermakers' Association belongs to you, it is your organization; it is exactly what you make it and I know the loyalty of the boys of the state of Iowa, they have never shirked a duty, and I just want to say that I have already attended three state conventions and have a pledge from all three of a certain amount of butter, but I am going to expect something handsome from Iowa and I have a reason for expecting it. The state of South Dakota, where I attended the convention three weeks ago, with 126 creameries in the state pledged 75 tubs of butter; I was next in Minnesota. We expect great things of Minnesota; it is a great state, but they have pledged us 400 tubs for that convention, and it will be no surprise to me if they make it 500; 500 tubs, my competitor, Mr. Olson, says. I do not want to put it to you too strong, it is your organization and we want you to support it.

I live in Iowa. I am not a Chicago citizen; I live in Iowa today as much as ever and I am just as proud of anything Iowa does as ever, although I am out of the state a great deal of the time and live in Chicago three-quarters of the time, but I want to say to you that we have nothing in Chicago that comes up to the building they offer us in St. Paul for this convention. We are going to give you the best convention in St. Paul next March that has ever been held anywhere; we are going to give you the biggest one with the grandest attractions that has ever been held, and I know the loyalty of the buttermakers of the state of Iowa will cause them to stand by their institution and give it the support they have never given to any organization heretofore. I thank you.

J. J. BRUNNER: I noticed this afternoon that some of the buttermakers had gone home and I heard them say that they wanted to see their butter before leaving, therefore I move that hereafter the butter room be opened the second day of the convention after the afternoon session. Motion seconded and carried.

Meeting adjourned to 9 o'clock Friday morning.

FRIDAY MORNING SESSION.

Meeting called to order at 9 A. M. by President Barney.

THE CHAIRMAN: The first topic on our program this morning is an address, "The Management of a Co-operative Creamery," by Mr. Ross, of Clarksville.

THE MANAGEMENT OF A CO-OPERATIVE CREAMERY.

J. J. ROSS, CLARKSVILLE.

Mr. President, Ladies and Gentlemen; Members of the Iowa State Dairy Association:—When our worthy secretary asked me if I would accept a place on the program, taking for my subject "The Management of the Co-Operate Creamery," I at first felt like declining the invitation, for I thought the subject was far too important to be intrusted to one with my limited experience and ability; however, after thinking it over I decided to try and possibly I might throw out a few hints that might be of interest to some.

It seems to me that there never was a time in the history of the creamery business when the co-operative creameries were in such need of successful management as at the present time, especially in localities where competition with the larger concerns is so keen, where the co-operative creameries are obliged to be successful or go out of business, and I sincerely think that if a co-operative creamery is run successfully they need have no fear of any centralized creamery or condensed milk factory freezing them out. As I said before the subject is very broad and important and I will try in a brief way to tell you how I manage a creamery and make it a success.

In the first place it is necessary in all co-operative creameries to have a board of directors, a secretary, treasurer; usually the president may be one of the members of the board of directors, and right here I would suggest to limit the board of directors to three or not more than five members, as there seems to be less friction and more harmony among the board of directors where there are only three members. The board of directors should have jurisdiction over all the business of the creamery, but the management of the *creamery* should be placed in the care of one competent man, either the secretary or one authorized to do the business, and on whom rests the responsibility of making a success, or otherwise, of the co-operative creamery.

His duties are many and he should be untiring in his efforts and striving all the time if he would keep harmony and good will among the patrons and all interested.

The manager should understand the creamery business thoroughly and not depend too much on the buttermaker. He should insist upon having a daily report of the business done at the creamery, and in that way he would know at night the exact condition of the business, the same as the banker or the successful merchant.

Since the question of moisture control came up it is all the more important that a record of the daily make be kept—in that way the manager knows exactly how many pounds of butter fat has been taken in, and has a good idea of how much butter will be churned from the same. In our creamery we make a report of the fuel consumed daily and all the expense of running the creamery is shown on the daily report, and at the end of the month the manager submits a monthly report of business done at the creamery for the month to the board of directors, who in turn audits his accounts. In this way the manager is in touch with the working at the creamery, and the board of directors are in touch with the manager, and the books are closed each month.

It is not only necessary for the manager to keep in touch with all the workings at the creamery, but on him rests the responsibility of keeping in line the patrons of the creamery, and I am sure those of you who have been in this position will agree with me that this is no small responsibility. In his dealings with the patrons he must be careful, accurate and prompt, treating all courteously. Should he make an error, be prompt to correct it and treat all with respect—above all be perfectly honorable and in this way you will gain the confidence of the patrons that will be unshaken.

I find it necessary and very profitable to get out among the patrons and get acquainted—take an interest in their business, instruct them in the handling and care of milk and cream, and invariably after such visits you will be well paid by having better cream and milk delivered and the patrons seem to respect you more for taking an interest in their welfare.

The manager should also be very close to the buttermaker. In fact, the success of the creamery rests a great deal on the buttermaker. He should be diligent, honest and up to date, one that understands thoroughly his work in the manufacture of good butter, and I would say that such a man is more valuable to the co-operative creamery at $100 per month than a great many buttermakers I know of that are working for $60 per month. I think where a great many of the co-operative creameries make a mistake is by thinking some other man will do the work just as well and will let the old buttermaker go because the centralized creamery offers him more money.

I sincerely believe that if the co-operative creameries were as careful to employ only first class buttermakers, regardless of the price necessary to secure them, as are the larger concerns, it would mean a great saving to the creameries and a higher average price paid for butter fat. When you secure such a man give him complete charge of the creamery plant, authorizing him to maintain right and justice to all and insisting on all connected with him in doing their work promptly. Take him into your confidence; consult him in regard to selling the butter, etc., and in all changes or improvements in the plant. With this confidence existing it will inspire the buttermaker to perform his duties to the very best of his ability.

I think a very important factor in the success of the co-operative creamery is in marketing the butter. Be sure the commission house to whom you ship is responsible and ascertain through them the requirements of the market. Try to furnish at all times as near as possible the goods that will give the best satisfaction. By this method you will make a reputation for the goods, and they will sell more readily and at a better price than if you were not particular. I firmly believe in keeping the quality of butter to the highest standard possible, though it is necessary sometimes to lose a little in quantity. We had an experience along this line this summer. A neighboring creamery started up and fought for business, regardless of quality. They would receive cream that we rejected. In the course of time they were getting a nice run and they marketed the butter in a market where they supposed quality cut no figure, but instead of getting a premium, they were unable even to get top. The result was they were compelled to pay a great deal less for butter fat. Finally the commission house advised them to ship elsewhere. They tried different markets and at last suspended business. In a report to the creditors it was claimed that poor sales were the direct cause of suspension. Sometimes, I think, it is well to divide shipments to see how weights, etc., compare, but as a rule, I think, if you stand by your commission house so they can get a reputation on this certain brand of goods, I think they can do better for you a great deal, than by changing around. I have at least had the experience of a trial for I have made weekly shipments to the same commission house for the past ten years and would say that I have found them entirely satisfactory. Of course it is necessary to secure a reliable house.

In conclusion, let me say that the manager of a successful co-operative creamery finds something doing all the time, from visiting the patron on the farm, where the raw material is produced, to the finished product delivered to the consumer's market, and I think were it not for the encouragement we receive from our national and state governments some of us would feel like laying down. I feel like commending the work of Chief Webster, especially in sending out blanks to secretaries and managers of creameries for monthly reports. In this way they seem to be more interested and become better informed as to the workings of the creamery.

We also feel very grateful to our State Dairy Department for the instruction and help we are permitted to receive. The only regret we have is that we do not see them more often. And I sincerely hope that ere long our state legislators will see the great need of more help for this department and will appropriate sufficient funds so that we may be kept somewhere near abreast of our neighboring states in the way of more creamery inspectors. But, Brother Buttermakers and Creamery Managers, until we get such help as we are urgently in need of we must shoulder the responsibility ourselves and now as we go to our respective homes from this the greatest meeting that the Iowa State Dairy Association has every known and filled with enthusiasm from having listened to addresses by Chief Webster, Ex-Governor Hoard, Professor McKay and others, let us strive to interest our patrons to better dairying; try to educate them along the lines that they seem to be the most in need of and I think from the remarks of Professor McKay that we buttermakers need to be very careful if we would keep the reputation on our butter up or rather get it back to the standard to which is expected of us. Let each one of us try and do the very best we can to make a tub of butter and send it to St. Paul to the National Creamery Buttermakers' Association in March, even though some of our butter did not score as high as we thought it would; do not be discouraged; try again and possibly we may stand higher next time. I thank you.

THE CHAIRMAN: If there are no questions we will pass on to the next on our program, which will be an address by Mr. N. H. Trimble, of Alden.

ADDRESS.

N. H. TRIMBLE, ALDEN, IOWA.

Mr. Chairman, Ladies and Gentlemen:—If they had allowed me to make my speech or address before Mr. Ross I might have been able to say something. Mr. Ross told you a good deal about what a buttermaker should do. He said when the secretary asked him to make an address on the management of a co-operative creamery he was going to decline. Well, the secretary did not use me that way; I did not know that I was going to speak until I read it in the Marshalltown Times-Republican; saw my name there for an address on the manufacture of butter from the manufacturers' standpoint. I suppose because I was so well acquainted with President Barney, Secretary Johnson and Brown the treasurer they knew that Trimble was pretty good natured. President Barney and Mr. Brown were down at a picnic we had in June and we gave them a good time, as we always try to do down there, and if they come back we will give them another good time and we are capable of doing it in Alden.

We have a little creamery up there doing a small business on the co-operative plan. I have been buttermaker there for almost seven years and my wife says I am going to stay there for seven years more. The manager is here and I suppose he has something to say about that, but I am going to say a few things on the manufacture of butter from the manufacturer's standpoint.

Those of us who were fortunate enough a year ago to hear Mr. Wright's speech at Cedar Rapids heard him use such an expression as this: "Of all there is good Iowa affords the best, of all there is best Iowa produces the most," and there is one thing we can say, we have one of the best dairy commissioners, if not the best, in the United States. He did not exaggerate any when he said that we produce good dairy commissioners. Then we have a dairy school that in my opinion is the best in the United States. I am very much interested in the school at Ames. I have been there for only a short course myself, but during that course I learned a good deal about making butter, and there is no excuse for any buttermaker in the state of Iowa to plead ignorance or, as Professor McKay said last night, to be twenty years behind the times, and he seemed to blame the buttermaker for all that. In a creamery managed in the way suggested by Mr. Ross a buttermaker would have no excuse for poor goods for he would have a manager who would give him the machinery necessary to run it; he would have all the modern equipments for making butter. I know of creameries that claim to be too poor to get up to date machinery and the buttermaker is struggling along without the proper machinery to work with, and in that case I do not think the buttermaker is altogether to blame.

I believe in making the butter we should first begin at the farm end of it. Professor McKay intimated that last night. If he cannot get good raw material no man on earth can make good butter. A few years ago when I was running a whole milk plant I did not know a third as much about making butter as I do now; it was my first year making butter and I have a score in New York city yet on ninety tubs, a tub of each day's make, and it scored 98. I evidently have not scored 90 at this convention for my name is not on the list, and yet I do not feel at all bad about it. I have fallen down before and expect to fall down again, but I expect to keep on making butter because I love the business.

To begin at the farm, I think it is the duty of every buttermaker to become acquainted with his patrons, talk to them, visit with them. We may not have much time to visit, a man that is making a ton of butter a day has very little time to go in the country and visit his patrons, but most of the patrons come to our creameries once a week anyway, and that is quite often for some of them to deliver cream, but they come there once a week and you can talk to them and be friendly with them. Never be out of humor. That is pretty hard to practice. The machinery may not run right and we are liable to go edgewise. I think that sometimes happens to every buttermaker; I am not going to brag any at all, but a man told me one day last summer that he had known me for five years and never saw me out of humor. Well, I used to get out of humor and I used to go out to the boiler and start a fire or something of that kind until I cooled off, but I have no outlet now because we are running the creamery by motor, so I have to keep cool. After you become acquainted with your patrons talk to them, advise them about the kind of milk and cream they are bringing to the creamery, tell them it is to their own advantage to bring good milk and cream, cream I would say at our creamery, because that is what we are mostly receiving. We have ten milk patrons and 290 cream patrons. You can handle most men in this way and they will listen to you. Occasionally you come across a man that you have to handle without gloves. I had a little experience this fall. We had a man that had been bringing rotten cream; we are not supposed to take rotten cream, that is, if the dairy commissioner finds it out, but this man brought cream all summer that was not good. On the 18th of September, pay day, he came in and poured his cream into the weigh can and I said to him, "Do you think that is good?" "Yes," he said, "that is fine." I said, "Well, you nor any other man can make good butter out of that; it is hardly fit for a hog. What have you been doing with your cream since the 5th of the month?" He said, "I churned some." We have not seen that man since. I had to use him just a little bit rough, but he is an exception. I have had other instances where by speaking to a man in a kindly way and being good natured with him would get him to deliver good stuff out of which I could make good butter.

The next step is the weigh can. I believe in the buttermaker being at the weigh can just as much as possible. In the seven years I have been at Alden I have had just one boy that could weigh to suit me, and that is my own boy. He is at Ames now and going to stay there for the next three years if nothing happens. He weighs, and I think the manager will bear me out in the statement that the patrons like him and if anything goes wrong he calls me. I like to be at the weigh can, where I can meet the farmers. We have farmers that have not been in our creamery for over a year and they come to the creamery every other day. They will come there and fill up their skim milk cans, or if they bring cream, go away. We enlarged our creamery this spring and one man was in there the day before yesterday. He said, "I have not been in here since you built on," and he was a stockholder, too.

After you get through at the weigh can go to the starter can. I have been called a crank on starter; perhaps I am. I have been making butter twelve years and I think twelve batches of butter would take in all I ever made without a starter. I made starter when there was no starter can that I knew of. I believe I got the first Haugdahl starter can that was made. It had a wooden bottom in it and I think about the second day the wood spread and the bottom and whole thing was gone; it leaked. That did not discourage me. Make a starter and if you do not know how to make a starter go to the college and have Prof. Bouske teach you how to make a starter; it will only take a few days to learn how and it will bring up the grade of your butter. Some of you may ask why my butter did not score more than 90 here if I had a good starter. I had a good starter, but I may have had some of that old cream. I did not aim to, but likely got it. At the short course at Ames in the winter you can learn how to make a starter. I was told not long ago about a man about whom we boast a good deal in Iowa, who got a starter can; he used Ericsson culture, pasteurized his milk in the starter can, put the culture right in the starter can and let it stand there until it got sour; then he used a pail of that starter every day for a week. Now if any man on earth with any judgment thinks that will make good butter he is mistaken.

After we have a good starter we want to come to the cream vat. If you have an open vat you can make good butter with it if you try. The supply houses will tell you one kind or another is best; I do not know which is best; I am not prepared to say; I never used any until the last few days, but be sure and ripen your cream. Now I am not going to advise you to do as Mortenson, of Portland, did. He came to a creamery where I was making butter and remained there eleven days and he would sit up with the cream until 2 o'clock in the morning or get it just right before he would leave. I sat up with him during that time until way into the night to get the cream right and I told him if I had to make butter that way I would quit the business in twenty-four hours. There is a lot of hand separator cream that is ready to churn when it is received at the creamery. In that case I cool it down to 48 and hold it over until I get ready to churn.

Then comes the last operation, the churning of it. Prof. McKay said something last night about a man churning in a Disbrow churn at 56 to 58 and not getting any overrun.Well, I can churn at 56 in the Disbrow churn and I will not tell you what overrun I could get if I wanted to. We have to be a little careful now since the moisture question has come up. My conscience used to trouble me, or perhaps it was not my conscience, for they say when a man makes butter he has no conscience, but the manager and I used to talk about selling water in New York city for butter and we decided it was not right. Then the time came when everybody was doing it and our creamery, with the others, had to fall in line or go out of business. The centralizing plants had us scared to death, but we have no fear of them now, not the slightest, because, as we heard several times yesterday, if a co-operative creamery is run on the right plan no centralizer on earth can beat it in price. A co-operative creamery can pay from three to five cents more in spite of anything the centralizer can do, even if they sell 23 per cent to 25 per cent of water, as I have heard of them doing. I have tested butter that I churned that had 23 per cent of water, but I was very careful to see there was only one churning like that. With the apparatus we have today, the Gray and Irish moisture tests, and the right kind of bottle, we can come very close to telling what we are doing each day. Churn your butter at 52 in the summer, work it enough and salt right, but remember about the package. Have the package appear right. Then Mr. Ross said something about marking the tubs. Well, I used to do that; do yet when I have a churning of butter that I think it very bad. I do not claim to make the butter that I did five years ago. Seven years ago, when I first came to Alden, we were getting thirty thousand pounds of milk a day. Now if we get eight hundred pounds in three days we think we are doing well. We are making more butter today than we did then.

We as buttermakers must keep abreast of the times and not get twenty years behind, as Prof. McKay said last night. There is no excuse for falling behind. We must keep abreast of the times, and if we have a poor batch of butter mark it and notify your commission house to look out for whatever mark you put on that particular package, and in ninety-nine cases out of a hundred, indeed, I might say in the one hundred cases, you will lose nothing on the butter. The commission house that is handling your goods will see you through on it. We have a commission house, or the commission house has us, to which we have been shipping goods during the entire time I have made butter with the exception of a shipment or two that we would send somewhere else for experiment, but we would come back home again. I do not know whether we will ever quit that house or not; certainly will not if I have anything to say about it. Notify your house if you have butter that is off grade and give them a fair show.

Be careful about your refrigerator. I saw some score cards the other day in a whole milk creamery and I noticed on four or five of the cards "mouldy tubs." I do not know that the buttermaker is to blame for that. That does not have much to do with the manufacture of butter, but it has something to do with the finished product. Be careful of your tubs, soak them right, pack them neatly, do your work well, as though you were doing it for yourself. Be careful about expense. Chief Webster told us yesterday about it costing 1½ cents to manufacture butter. It cost us a little over 1 cent a pound to manufacture our butter during the month of October.

The co-operative creamery will pay a bigger price if it is properly managed; the patrons will get New York price or one or two cents above; I have heard of as high as five cents about New York being paid. I don't know just how that was done, but some do it. But if the creamery is well managed the patrons will stay by the home plant, and I think in ninety-nine cases in one hundred the buttermaker is responsible for the success of the co-operative creamery.

Another thing, I see Prof. Bower back there. Last fall he went out soliciting cream for the state college and he said if he went into a community where the patrons had confidence in the buttermaker he could not touch them with a ten-foot pole; he could not buy cream there at all; but in a neighborhood where they had no confidence in the buttermaker he could get all the cream he wanted.

THE CHAIRMAN: Gentlemen, I am sure Mr. Trimble has done very well. I don't know whether the influence the treasurer and myself had on him at the picnic had anything to do with it or not, but they certainly do treat one well at Alden, they know how to treat people. Are there any questions anyone would like to ask Mr. Trimble?

MEMBER: I would like to ask Mr. Trimble if he ever saw any cream that the patrons thought was bad? In my experience of twelve years I have never found a customer that would admit his cream was bad?

MR. TRIMBLE: I had a case of that kind come up this summer. A man living within two miles of town came twice a week. He sent his little daughter, a girl of about ten years, over. We are good natured over there and would lift the cream and empty it and send the can back in the buggy. I wanted to get a chance to tell that man his cream was not good but I did not say any thing to the little girl. The man came over one morning, poured his cream into the weigh can, (by the way, I have a strainer in the weigh can), the top of his cream remained in there and the bottom was whey. I said, "William, what do you think about that cream? Just smell your can." He said, "It is rotten." He was honest and he acknowledged it and I have had good cream from that patron ever since.

THE CHAIRMAN: We will now hear from Professor Bower, Assistant Professor in dairying at Ames.

SOME STANDARDS IN DAIRYING.

JOHN BOWER, ASSISTANT PROFESSOR IN DAIRYING, AMES.

Mr. Chairman: It was with both pleasure and pride that I responded to the call of your secretary to address the members of the dairymen's association of the state of Iowa. It is a pleasure to be here because of a natural liking for association with dairymen wherever found and it is a source of pride because I feel honored to be thought worthy of filling so important a position as speaker before such an intelligent audience. Nor do I use the word intelligent in a flattering sense, for dairymen, wherever found, and those who attend such meetings as these in particular, stand head and shoulders above those who are content to work, irrespective of what progress is going on about them, irrespective of any interest other than petty interests which come within their own narrow horizon.

You are a force in progressive dairying. You represent as individuals, and collectively as members of this association, what might be termed the forward movement or vanguard in everything which makes for improvement. To a large extent the future of dairying lies in your hands. As an association you mould opinion, influence in no small degree the character of legislation respecting things vital in dairying, create sentiment either for or against the industry whose foundation is that queen among animals, the dairy cow.

It is right then that we, as members of this association, should have a keen appreciation of our position, should have such standards of thought and action that they with whom we come in contact, moved by our ideas, enthused with our enthusiasm, will place dairying where it ought to be, in forefront of agricultural thought and agricultural endeavor in this most productive of all states, the state of Iowa. Instead of being considered a side issue, a tail end, tacked to other industries, or linked in unfortunate alliance with any other industry, dairying should stand out pre-eminently the chief of all, the most profitable of all industries, providing for its patrons not only hire for their labor, but something of the better things, the comforts and blessings of life. Self-sufficiency should be then one of the leading standards held before the dairymen of this country. If we as dairymen are content to count dairying as of secondary importance instead of that position that it should hold as an industry of primal importance because of fundamental economic principles involved, how much more will others, not interested in dairying, be willing to consider it as a side issue of no value except as a minor factor in other schemes of agriculture. We must be willing to stand on our own feet, fight our own battles, unmoved by any interests except those that will place dairying in its proper position among the activities of agriculture in this state.

To do this it is essential that dairying should have as its creed two outstanding features, the purity of its products and honesty and integrity of purpose of its partisans. It should have as its advocates men of understanding, men impelled to work in its behalf because of a consciousness of its possibility, not only as affecting their further prosperity, but as affecting the prosperity of their fellow men and this state to which we are proud to belong, and where else can such men be found if not among those here before me? Yet you know and I know that there are many among us who are not alive to the best interest of dairying, who are willing to sacrifice the good of the industry and with it their own best interest for immediate private gains?

We, who are familiar with conditions as they exist throughout our state, are aware that at least purity of our products is not always the guiding principles which direct our efforts. We are aware also that questionably honest practices are the rule of some.

In the keenness of competition which now exists quality seems to be forgotten. The cry comes, how can we make a good grade of butter from the cream we are now receiving. Makers and managers are willing to go to almost any limit if they can cover up or hide from the consumers of butter the decomposed condition in which much of the cream is now received. How many makers are engaged in creameries, guaranteeing "extras" out of cream, some of which is scarce fit for the "swill barrel," let alone human consumption. Cream two, three, yes, ten days old, is being made into butter notwithstanding everything science has to teach us in regard to possibility of ptomaine poisons as produced in old cream and milk, notwithstanding other fermentations which so far as we know or care are a menace to public health. Pasteurization is being used not as a scientific process in the manufacture of butter of good quality, but rather as a "cure all" for the indifferent quality of cream now received.

Surely it is not too much to say that such standards as motives of action are not conducive to the best interests of dairying. Instead of working for quality in the raw material we seem to be content to doctor up, what cannot be doctored without in some way working to the detriment of the industry. Whatever comes we must not give up until we in Iowa have raised the standard of quality from its present rather undesirable position. To do this we must have better raw material. To get this better raw material should be then our purpose rather than in improving what after all cannot be permanently improved, this low grade cream that is now being received. We cannot make gold out of silver ore, much less can we honestly place before the consuming public a high grade butter made out of raw material which is of very questionable quality, made so by fermentations which show very clearly that the cream was produced under careless, if not unclean and even filthy conditions.

There are managers and directors who feel sore if we do not make a high grade quality of butter out of a low grade quality of raw material. Gentlemen, it can't be done, and the sooner we realize this the better. Taste some of the cream and one would require to have a strong stomach if he would retain any portion of such stuff. Yet we are forced to receive it as it is, make it into butter as best we can and in some instances place it in a beautifully illustrated carton, on one side of which a herd of cows is seen to graze peacefully in clover, knee deep, by a clear limpid brook babbling peacefully. On the other side we read that this special brand is made of pasteurized cream, guaranteed to be pure, sweet and clean, while inside is found a grade of butter which, to tell the truth, we are heartily ashamed of. Such practices are a menace to the industry and unworthy of a dairyman.

Nor is this all. Most of us know of men, if they are worthy of the name of men, who, when a patron of another creamery comes to him with cream, "boosts the reading," so to speak, as he chuckles to himself, "I guess I fixed the other maker that time." Others there are who are small enough, 2x4, and mean enough to "cut" the tests that he may show an overrun that he has not brains enough to obtain by any other means, justifying himself that it is a co-operative creamery anyway and it all goes the same road. Others, too, there are who pay reasonable prices where competition compels it, but who are actually stealing from the patron whom he has in his power. Still others there are who are willfully and with purpose aforethought still loading their butter with water to an extent beyond the standard set by law, trusting that the revenue officer may not reach them. Such men are unwilling to compete on a fair and open basis, but are willing to shelter themselves behind their rascality, which they call business perception.

This may sound to some as an exaggerated condition of affairs brought about by the present competition. 'Tis true that the major portion, the great bulk of the industry in this state, is on firm, honest basis, and we as dairymen are proud of it. On the other hand there is much that adds to the discouragement of increased dairying throughout the state. Patrons have the right to honest weights and honest tests whether it comes from a centralized plant, a private creamery or a co-operative one, from agent or anyone engaged in the testing of cream. Over reading and under reading are alike to be condemned as being inimical if not fatal to interests represented here today. It affects the competition between manufacturers very vitally. One per cent may not mean much to you or to me here, yet one per cent on the 25 per cent cream may increase or decrease the overrun 5 per cent and either put us out of business or place us in a position to crush out honest competition. It also affects the relations existing between manufacturer and producer. The producers are not getting correct tests, and I fear that there are many instances where they do not, not because of any intentional dishonesty on the part of the operator, but because of ignorance of principles and practices involved in the correct manipulation of the Babcock test, there can be but distrust and dissatisfaction in place of that co-operation and harmony that should and ought to exist. I can recall in our work with the short course men an instance where as much as 5 per cent difference was made by four men in testing cream out of the same sample. Fancy, if you will, what sort of tests are now being handed out to the producers of Iowa by agents who have never received any special training in the sampling and testing of cream and who are not sufficiently interested to know just how variations in test affects the producer and the manufacturer and dairying in general in this as well as other states. An intelligent appreciation of the correct value of testing in its relation to progress in dairying cannot be too strongly emphasized. I fear in some of our creameries that the producer has some justice in his accusation that the Babcock test is largely a matter of guess-work, if not actual stealing. What standard shall you and I adopt in regard to this important question? What standard shall you and I insist shall be enforced in this state of Iowa? The producer has also the right to fair returns for his product. I fear he does not always get it. Now, I am not one who would confine the income of investors to a paltry 3 and 4 per cent interest on money invested. They should have over and above the man who sits in his chair and lends his money out under safe security. To the shrewd business men of foresight, faith and initiative who are willing to risk their time and money through years of depression as well as prosperity, I take off my hat and would grant them all that they are entitled to for their courage and enterprise.

But I fear that there are some of our producers who are not receiving all that they are entitled to. Advantage is taken of the position of the producer, advantages are taken of his ignorance of values as related to dairy products, of his ignorance of factors in creamery management. It would seem that if we are to encourage dairying in this state, if we are to arouse any sort of interest in districts where little or none exists, we should be willing to so exert ourselves to manufacture in the greatest possible quantity conducive with best quality the raw material given into our hands, to so manage our business that we can, while obtaining for ourselves the maximum lawful and just returns for labor and capital invested, give to the producer every cent possible. Not only must we encourage dairying by cultivating in a greater degree that spirit of confidence between producer and manufacturer that is so essential to increased business enterprise, but we must, to a still greater degree, encourage dairying by stimulating increased interest in better cows. If you can get your patrons to see the importance of proper breeding, weeding and feeding you have in part solved the question of quality and in no small degree done away with that harrowing competition between neighboring creameries by supplying close at hand the necessary raw material.

You as makers and managers should also be fully informed as to the latest triumphs in dairy production. Are you aware that there is a cow, Colantha's 4th Johanna, who bids fair to beat all official records of production, even that wonderful record of Yexka Sunbeam, of over 1,000 pounds butter in one year? Are you aware that there are a large number of cows which have produced over 500 pounds butter fat per year? Do you know that there are dairy herds of 30 cows and more which produce over 450 pounds butter fat per cow per year? Are you familiar with the high prices that are being paid for dairy excellence as it is found in individual animals when $10,000, $15,000 and $20,000 is not considered too much to pay for blood of the right strain? Knowing these things, are you making use of these facts to stimulate the dairymen of your district to still greater achievements in dairy production?

On the other hand, do you know that of the many cows that are being milked in this state nearly 500,000, or one-third, are being kept at a loss? What are you doing to aid the producers of this state to get rid of these parasites? Are you advocating the beef cow, the dual purpose cow, or the special dairy cow to the producers of this state? I can understand why breeders of pure beef stock are advocating the former two types, but I cannot understand why dairymen, wherever found, should not advocate the special dairy cow. With land worth $100 to $125 per acre, she alone at ruling market prices can return to her owner a margin of profit over and above value of money invested in land and labor. She can, in a single year, if she is the right type and handled in a proper manner, produce in value, in butter fat and skim milk, as much as the selling price of two steers, in many cases ten times the profit. Not only that, but she can do it over again the next year. Many of us are afraid to mention a special dairy cow to our patrons much less advocate them. It would seem as if we were ashamed of her. Is it any wonder then that she is ignored by those not so well informed as we are or should be in matters pertaining to dairying?

It would seem then that there are at least three lines of advance that we as dairymen may undertake, first, improvement in quality; second, improvement in and enforcement of such legislation as will encourage dairying through guaranteeing to manufacturers a just and even basis of competition, and to the producer fair and honorable treatment; thirdly, by arranging a campaign in favor of the special dairy cow. The last is in our own hands; the first and second are only in part under our control. It would seem as if we had given up the fight for quality. We would seem to have been beaten back by the tide of competition. It would look like as if Iowa is to take a back seat to Minnesota, Wisconsin and other progressive states. Such states are, through their respective governments, employing trained men whose business it is to aid the dairymen of the state by enforcing laws which are a credit to the legislators of those states. In the province of Ontario, Canada, there are a force of instructor inspectors ten times as large as poor Iowa can afford whose duty it is to enforce laws which might be called drastic in Iowa, but wihch are producing a cheese which is without equal for quality anywhere. Is Iowa to stand still in this matter? We have a few able men, 'tis true, such men as Mr. Wright and his secretary, Mr. Smith, Mr. Johnson and Mr. Odell, we are proud of, and well we may be, but they are not enough. If we can improve the quality of our butter to the extent of 1 cent per pound it means $1,200,000 to the state of Iowa. I think it is possible in many instances to improve it 5 cents per pound and at the same time to encourage consumption 20 per cent by supplying a better quality, besides relieving we poor buttermakers of the job of making butter out of cream which is already made, so far as its quality is concerned. I would we had with us some of the legislators of Iowa. If we could only get them infected with the dairy microbe, that they would be so impressed with the imperative necessity of this matter that they would divert from the treasury sufficient funds to employ at least a dozen men to enforce such laws as are absolutely essential, what a change there would be in dairying in Iowa.

If we turn to those countries where greatest progress has been made in dairying, as Denmark, Australia, New Zealand, we find that government inspectors and co-operation is the writing that is found on the wall. That writing spelled success to them; it would spell success to us, and place Iowa in the forefront of the states as the most economical producer of dairy products of the highest possible quality. As members of the Iowa Dairymen's Association let us do everything in our power to build dairying on a firm and sure foundation, backing in every way possible everything that tends to improvement in quality, supporting the enforcement of such laws as are essential in fair and open competition, encouraging dairying everywhere by submitting in no undecisive manner its advantages over other phases of agriculture, not neglecting to impress the need of dairying with a dairy cow even in Iowa.

THE CHAIRMAN: Are there any questions? If not, we will proceed with the program and will now listen to an address on "Breeding up the Dairy Herd," by Mr. P. J. Julian, of Algona.

BREEDING UP THE DAIRY HERD.

P. J. JULIAN, ALGONA, IOWA.

Mr. President, Fellow Dairy Farmers of Iowa: Between myself and the newspaper men the address I had prepared for this occasion has disappeared, so I will be obliged to give you what is called an impromptu address.

When a man enters upon any proposition or trade it seems to me that he should give considerable thought, time and study to that proposition or trade. Before I go on I would like to know how many real farmers I have in the audience. How many men in this audience are milking cows at the present time? Well there are a few, but not as many as we ought to have in the country surrounding Des Moines. As my subject pertains to you especially, it would seem to me that the dairy farmer or the farmer milking, no matter how many cows, should be here to hear what can be said on the subject, because, as I said before, when he or anyobdy else enters on a trade or proposition, he should study up everything pertaining to that before engaging in that occupation, so as to be as well posted as it is possible to be.

Now then, when a farmer enters on the production of milk the first thing that suggests itself to him is what kind of cows am I going to keep? What am I after, fun or profit? Now there is no one that thinks it much fun to milk cows twice a day, night and morning, year in and year out, but you can have more fun if you milk the dual purpose cow than you can if you milk the special purpose cow, because the dual purpose cow does not give much milk for a long time and you can have lots of fun during that time, while on the other hand the special purpose cow is pegging away all the time and at the end of the year you will have a profit and if a profit does not make a man feel good I don't know what does.

Now in selection of the dairy cow you want to look first to type. I am aware that there is a sentiment prevailing largely in the minds of Iowa people that the dual purpose cow is the cow for Iowa. That has been instilled and pounded into their minds for all time by the editorial press because they could raise a steer beef for less, losing sight of the fact that butter and milk was the main object they were striving for. Now it is true that in times past and perhaps up until very recently the dual purpose cow had a place on the farm in Iowa. Lands were cheap, grass was plenty, and the fact is that not more than twenty years ago a man could keep all the cattle he wanted at the expense of herding, hiring a herdsman or paying 40 or 50 cents a head to keep those cattle five months in the year, and the other seven months he could keep them on coarse forage that cost him practically nothing, because I have within the past twenty years put up hay on other people's land, people who had it for speculation, for the cost of labor, and at that rate a man could milk almost any kind of a cow and make money. I have taken considerable pains to investigate the price of lands in other countries to ascertain what they are doing on those high priced lands. I find in Holland that land is worth from $500 to $1,200 an acre; in the Island of Jersey and Guernsey land is worth from $600 to $1,750 an acre. Now it occurred to me that the men in those places must be doing some extra work in order to make land as valuable as that, so I went a little farther and tried to find out what those men were doing to make land so valuable that they could command from $600 to $1,750 an acre, and I found in all cases that dairying is the principal occupation of those people. Here in Iowa we have land worth from $50 to $150 an acre, and yet those people in Holland and the Islands of Jersey and Guernsey are competing with the markets of the world, are buying Iowa grain, paying the freight from here to Holland, Guernsey and Jersey and shipping their butter into the London markets in competition with our American butter. How are they doing it? Are they doing it with those dual purpose cows that the agricultural press of Iowa and the agricultural college of Iowa have been advocating so long? Not a bit of it; they would not think of such a thing. They have dairy breeds there that were established before the time of Julius Ceasar and they have been going along in that same line ever since, and here in this country we have been trying to milk cows from a breed or breeds that for one hundred or more years have been made for the beef block. How are we to expect to make money milking cows out of such animals as that?

Ayrshire cow "Croftjane Dinah 19th", owned by W. P. Schank, Cruon, N. Y.

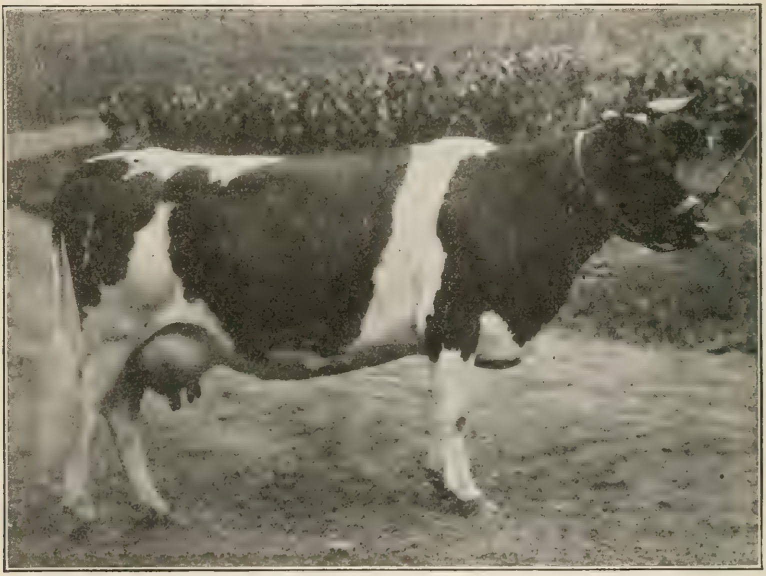
I yield in admiration to no man for those grand beef animals I have seen down at the International Stock Shows at Chicago, animals that are bred as the best talent in the country can breed them, grand animals they are; but I say keep those things distinct, you beef men, raise your beef animals, but you dairymen, find your special purpose cow and stick to her. I make bold to make this statement, although I am aware that the agricultural press in this state are to a large extent opposed to it, that the special purpose dairy cow, regardless of her calf, we will not take her calf into consideration at all, will make you more profit, more clear profit, than the combined annual production of milk or butter and your steer calf for one year. I say I make bold to make this statement that there is more clear profit in the production of butter and milk alone from the special purpose dairy cow than there is in the combined product of your milk and butter and your steer calf from your dual purpose cow.

Now then, why go to work and spend time and money and profit taking care of a whole lot of calves and yearlings up to two years old and then find you could have made more money by not employing so much help or doing so much work yourself to take care of those steer calves, when you could have made more money taking care of the special purpose cows?

I said the agricultural press of this state was antagonistic to the special purpose cow, but I want to make one exception that I know of to that. There is a little paper printed down here in Waterloo; it is not very big, but it contains the very essence of dairy thought. I am speaking of Kimball's Dairy Farmer, and that, in combination with Hoard's Dairyman, will give a dairyman the literature he needs to build up one of the special dairy herds, give him the knowledge he needs, give him the understanding he needs, and if he takes both those papers and studies them carefully and goes according to the light that is given him there I will guarantee that in the course of ten years he will have a herd of cows that no matter how hard the times are or how high the price of labor is he will come out on the right side of the ledger at the end of the year, and you cannot say that of your dual purpose cow.

I heard a statement here last year by my good friend, Dairy and Food Commissioner Wright, and it seems to me he rather exulted in the statement that the dairy cow of Iowa had made 140 pounds of butter on the average during the year. Just think of it! If I did not make more than 140 pounds of butter a year off my herd I would be in the poor house after a while, because I would gradually go down and down. Do you know while I am away I have hired a man to take my place doing chores, and he will not milk, and I am paying that fellow $2.00 a day and his board to do ordinary chores? Can we stand that kind of work with the dual purpose cow? Then again, look here. If 140 pounds is the average how many cows are there under that? There are a whole lot above that, but how many are there under that? How many cows are you milking that will not give you more than three or four thousand pounds of milk a year? It does not matter whether you are selling your milk or making it into butter, the amount of milk you make and the per cent of butter fat in the milk determines the price of butter and the amount of milk you are selling determines the profit you will get by the price you get and the number of pounds of milk you get. Governor Hoard said here yesterday that he made nearly eight thousand pounds of milk out of his Guernsey cows. Now, I am no breed man; that is, I do not believe in praising up a breed that I am using and running down every other breed. We have five or six grand breeds of dairy cattle. He has a Guernsey herd that is a full blooded herd. I think he said his annual production of butter amounted to about $101.00 a year; then he values his skim milk at 15 cents per hundred, bringing up the annual production of his herd to $117.50. Mr. Griswold, at La Crosse, Wis., has bred Guernsey cattle that he graded up to an annual production on butter alone of $100 a year, taken from the creamery report. Is there any dual purpose cow in the state of Iowa that will do that?

I have read the statement in Wallace's Farmer that there are herds of cattle in this state that will produce beef animals and also produce 300 pounds of butter a year. I challenge the statement. I would like to have any man or number of men make a sworn statement, taken from the creamery books and showing the number of cows they milk, as to what they are doing, because I do not believe there is a herd of full blooded beef animals in the state of Iowa that will give 300 pounds of butter a year. A number of years ago, when I first started in the cow business in Iowa, I was fortunate in picking up a few cows of the dual purpose type to milk. We had a sire in that county that would give grand good milkers, a shorthorn registered bull, but he never gave a steer calf that was worth taking to Chicago any more than our dairy steer calves were, but he was a good begetter of heifers and cows. The first cow I bought of this sire was in the spring and I turned her out on grass, gave her a little screenings, but nothing very heavy, but that old cow, under the conditions I raised her, came through in the spring and gave me over twelve



Gurnsey cow "Meistress Joe", owned by Charles S. Besley, Edison Park, Ill.

pounds of butter a week. That was pretty good. Then I found I could buy six more from the same sire and I bought them and those cows gave me grand results. If I could have continued on that line and raised cows equal to them that breed would have been fine, but I bought some calves along with those cows, bred to a beef sire. The calves were from a beef sire and I raised them up, took great pride in them, worked over them a great deal, took a great deal of care of them and fed them along dairy lines. They were fine looking animals; men would drive along the road and say, "Those are the finest looking animals I ever saw," but when those calves came in there was not one of them worth spending your time milking them. I kept them all until the second year and bred them to the best bull I could find, but I was just as bad or worse off than before.

A dairy cow has two purposes, one in the milk that she will produce and the amount of butter fat, and the other is the traits that she can hand down to her offspring. The first dies when the cow dies and if she has not the trait to pass on then her value is gone when she is dead; but there is an inherent value in that cow and that is the reason the special dairy cow, of the full blood at least and the high grade, is worth more money than another cow that will give equal production, but has not the characteristic to pass on to her offspring. That is the kind of cow you want. If we are to make money out of dairy cows in this state we will have to raise our annual production considerably over 140 pounds of butter a year. As Governor Hoard said, in Jefferson county, Wisconsin, his home county, with the Guernsey, Jersey and Holstine breeds, they have raised the annual production to over 250 pounds of butter a year. How are they doing it? Using the dairy sire exclusively and raising the heifer calves.

Those men will tell you to look at the rough food we raise in Iowa. It puts me to my wits end to know how to raise the rough food my cattle consume. A dairy calf will consume more rough food than any beef animal I ever saw. That is what we want; we want to make a big digestive tract for the food to pass through, and there is nothing like good clover hay and rough food to feed to those dairy heifers and dairy cows. The dairy cow will consume more rough food than any animal on earth of the milking type.

Do you know I think the time is passing when we are going to have our big corn fields, with forty per cent of the value of the corn plant left out in the field, to be worth perhaps 50 cents an acre for cattle to pick over? We have got to stop that and we are going to do it by the silo. We cannot afford, with land worth $100 or more per acre, to allow nearly half of this valuable product to lie out of doors. The other day when I came down on the train corn was standing in many places and I saw cattle out in the corn fields with the snow coming down, the worst possible thing that could happen to a dairy cow. When I left home after dinner my cattle had been out to drink and were back in the barn lying down. There will be no stop in the production of milk in that herd if the man in charge will take anywhere near the care I did, and when I get home the cows will be giving the same amount of milk they did when I left.

It is up to you, farmers. Are you going to get the cow that will keep on giving milk the year round by proper selection, feed and care, and do away with the dual purpose cow?

Now, then, in taking up the subject of breeding up a dairy herd, the first thing you want to give your attention to is selection of a sire. That is the first thing that must be done. I want you to do this, want you to study all the dairy literature you can, learn everything about the dairy business you can, make up your mind which breed you like best, then buy the very best sire of that breed you can get. Write to some good breeder or a half dozen of them if you desire, and tell them what you want; tell them you want a sire from one of the best cows they have. See that she has a good udder and teats, for I tell you that is a mighty important matter. If you sit down to milk a cow and she is short teated and her back is out of shape it is not a very desirable job, and the sire from such a dam as that is apt to carry that trait on. You want to see that your sire is dammed by a cow that has a good udder and teats and is a large producer; the larger the better. That is where a lot of you farmers make a mistake in selecting your dairy sire; you are looking for something cheap instead of something good. Now you will never get the best without paying a fair equivalent for it; if you want something good you must expect to pay a fair price for it, and I can name you breeders of dairy cattle in this state who are paying $500 or $600 to get a sire, and how can you expect to get an animal from such a sire as that for a song? It cannot be done. The sires from which you want to get your heifers ought to be worth more money than those that you can pick up around the country are worth. I will say right here that there is no breeder in the state of Iowa or anywhere else that can go to work and carefully select a herd of cows, put in the time required, and every two or three years buy a new sire at a price of possibly not less than $500 and afford to let you have anything under $100. It cannot be done and the breeders make money, and you cannot afford to buy one worth less money than that; you cannot afford to keep one for less money.

As I said, the sire is the principal thing. The next thing I would do would be to take such cows as I had in the herd. The average farmer will not bother much with the milk scale and the Babcock test. I do not do it as much as I really ought to, but once a week you can weigh the milk and two or three times during the season you can take a sample of the milk to your buttermaker and get him to test it for you. Pay him a little for doing that so as to be on the right side of him. It will help him out; his time is worth something. Get him to test your milk for you and take a fair sample from each cow; pour it from one vessel to another, stir it up or do something and take a fair sample. The buttermaker will give you a tablet that will keep the milk sweet until you get it to him in a bottle. Milk those cows until you find which cows are losing you money, and when you find out that the quicker you sell your poor cows the better. If you have cows that are going to come out even, if you have not too many, it might be well to keep them a while. They pay their board and you have the fertilizer to help you out.

If you use this special purpose sire you do not want to bother with the steer calf. I do not claim those steers will make good beef; once in a while you get a fine steer, but it is not very often. We special dairymen might as well say because we have a good beef calf now and then that we have a good beef breed, as the beef man to say he has good cows for milk. I would veal these steer calves and raise the heifer calves and give them the best care possible. I have rarely ever left the calf with the mother more than a day or two, sometimes not more than the first day, because I have the cow where I can look after her, in a good box stall. I place her there by herself some time before she freshens, except in the summer. I watch her closely. When the calf arrives, if everything is all right, I let her stay a day or two, depending on the cow's udder; if her udder is bad I let the calf stay a little longer, because it aids me, but the sooner you get the calf on milk the better. Do not give it too much at a time. By that I mean, two or three quarts three or four times a day, depending on the calf. Do not vary the amount; that is where many farmers make a mistake and the first thing they know they have trouble on their hands. Measure or weigh every drop of milk you give the calf; feed it for a while two or three times a day. After ten days dispense with the three times a day and feed it twice. When about two weeks old your calf will nibble at something; then have a little hay there, just enough so they can nibble at it and clean it up; then put a little meal in their manger, after they have drank their milk. Keep a little in the trough; do not put enough in so they will nose it over and over and keep it before them all the time; just give them enough to eat and clean up in a short time and no more.

Now I am not one of those that want to see a dairy heifer or calf a clothes rack. There is no need of it. W. J. Gillette, of Rosendale, Wis., the greatest dairyman of the United States, because he has produced the most wonderful cow the world has ever seen, says, "Flesh does not hurt a milk cow." You can feed a calf corn and ruin her for a dairy cow, but feed it plenty of oats, clover hay and some bran and you will raise a calf that will have a good deal of flesh, but still constitutional development, and when she comes to milk I believe you will have a better animal than if you try to stint that calf along. I do not believe in doing anything of the kind. I know some breeders say that is the way to do, but I do not believe you can raise a calf any more than you can a boy or girl without giving them plenty of good wholesome food and all they want.

If you have a spring calf I would not turn it out on the grass. I never could raise a calf where I turned it on grass and fed it milk at the same time; then along comes the fly season and you do not want that calf ate up by flies. You want a good, well ventilated stall to keep your calves in during the day and let them out at night, and after the flies have gnoe those calves are big enough and strong enough to go on the grass, but you must also keep up the bran and oat feed all winter, plenty of good clover hay, silage and all that. Those are all good so keep them going. I would rather raise a fall calf than a spring calf for this reason: That you feed the fall calf right through the winter; in the barn give him proper care, let him out in the sun, and when grass comes in the spring he is going right on to grass, the natural diet for him, and you will have no more trouble until next winter caring for the calf, providing you have plenty of grass.

When the calf is about to become a mother I would continue along in the line of feeding good wholesome dairy foods, and I do not mean by that that you have to give the heifer high priced stuff. You want to get great udder development and you can do your part with that, too, by feeding oats, bran, a little oil meal, or something of that kind, feeding along the lines that will develop that cow and give great udder development, and when she becomes fresh you are going to have a grade cow that I would almost guarantee, providing your sire is a prepotent one, that the poorest one of those heifers will produce practically as much as one of the best cows that you have in the barn. When you continue right along in this line, and if you feel that you cannot afford to buy a new sire, continue with this same sire on those heifers for a second generation, and if the sire is prepotent, if he has the right stamp that you want, he will transmit those qualities to his heifers in an intense form and you will build up your dairy herd in that way better than any other I know of, but by all means do not continue this sire any farther. Buy a new sire and when you buy a new one buy the best you can get, get a better one than the first you bought. Continue in that line and I will guarantee you will have a herd you will take pride in because there is profit in it for you; you will be willing to spend time and care in taking care of those animals because you will know at the end of the year the balance will be on the right side of the ledger. I thank you.

MEMBER: I want to ask one thing in reference to breeding. Mr. Julian made the statement that a cow would transmit her good qualities to her offspring. I do not understand it that way. I understand that the characteristics of the sire predominate at all times and unless you have a good milking sire the daughters of a good cow will not have the traits of their mother.

MR. JULIAN: I think you will admit if you have a cow that is a large producer and if she is mated with certain animals, she will transmit those qualities in combination with the sire to a greater extent than another animal that has not those large milk producing qualities. I understand the sire predominates but we do not know all about that. Some of the best authorities think that about 60 per cent of the sire and 40 per cent of the dam. I tell you there are a whole lot of those things that we do not understand but I will say that I would rather take a sire from a large producer and breed him in a herd of small producing cows and I will get better results in his offspring than I would to take a sire from a low producing dam and also grand dam a low producer and put him into a herd of large producing cows.

THE CHAIRMAN: Now, gentlemen, there is a matter that I wish to bring before you this morning which is later to come before our executive committee. We have the authority to fix the salary of our secretary. Mr. Johnson took the place of Mr. Kieffer a few years ago and at that time Mr. Kieffer's salary was $300. Mr. Johnson continued the year out at $150. What I want an opinion on is how much we are to pay our secretary, and I will entertain a motion as to what it shall be from this time forward.

MR. WENTWORTH: Mr. Chairman, I move that the salary be fixed at $150, as stated, from this time forward. Motion seconded and unanimously carried.

THE CHAIRMAN: I will now call for the report of the resolutions committee.

RESOLUTIONS.

Resolved, That we express our appreciation of the generous offer of the city of St. Paul to the National Creamery Buttermakers' Association, endorse the action of the executive committee in selecting St. Paul as the place of holding the next annual meeting and pledge our hearty support to this organization.

Resolved, That the thanks and appreciation of the association be extended to the State Dairy and Food Department for their continued effective work in the interest of the creameries of Iowa.

Whereas, The Iowa State Dairy Association receives no support from the state, while other dairy states are annually given large and increasing appropriations, and,

Whereas, The needs of the association work and work of dairying in general in Iowa require immediate and ample financial assistance; be it

Resolved, That we petition the Iowa state legislature for appropriations as follows: $3,000 for the Iowa State Dairy Association and $15,000 for the use of the State Dairy and Food Department, in increasing the number of instructors and otherwise extending their work.

Resolved, That we are opposed to the enactment of the law conveying special privileges to any class or working to the disadvantage of the local merchants, as proposed in the suggestion of Postmaster General Meyer for a parcel post law.

Resolved, That we express our appreciation of the good work of the Iowa State College, congratulate them on their splendid dairy equipment and pledge our co-operation in carrying out the work of the dairy department and the dairy farm on specialized dairy lines.

Resolved, That we believe that the best interests of the dairy industry would be served by making the dairy division of the bureau of animal industry a separate and distinct bureau, under the United States department of agriculture.

Resolved, That our heartfelt thanks are hereby extended to the city of Des Moines, the officers of the association, Jules Lumbard, Edward C. Lytton, Miss Kleo Odell, the creamery and dairy press and all who have contributed to the success of this meeting.

Resolved, That we appreciate the good work of the National Dairy Union in their fight to protect the sale of pure butter and hereby pledge the organization our future support.

Whereas, The present trend of the dairy business in the state of Iowa is towards the centralizing of the creamery interests in a few hands, which we deem to be against the best interests of the producer and consumer through smaller returns to the producer and poorer quality to the consumer, be it

Resolved, That we express our heartfelt thanks to Secretary Wilson and his assistants in the dairy division for collecting and giving out information as to the facts in this connection from all parts of the country, and for the presentaton of these facts by the chief of the dairy department at this convention.

(Signed)

E. R. Shoemaker,
J. J. Brunner,
S. B. Shilling,
E. M. Wentworth;
Committee.

On motion, duly seconded, the resolution was adopted.

The meeting stood adjourned, and arrangements having been made, a number of buttermakers visited the Agricultural College at Ames.

PART VIII

EXTRACTS FROM
STATE DAIRY COMMISSIONER'S
REPORT OF 1907.

TWENTY-FIRST ANNUAL

H. R. WRIGHT, Commissioner

CONDITIONS OF THE DAIRY INDUSTRY.

There have been no extraordinary changes in the dairy and creamery conditions in Iowa during the last twelve months, other than might easily have been forecasted a year ago. The change from the whole-milk system to the hand and separator and gathered cream system has continued to a marked degree and the patronage of the so-called centralizing creameries has increased in the aggregate. The strife between centralization and the system of local co-operative creameries has become more intense. As heretofore pointed out, nearly one-half of the area of this State is without local creameries, and the farmers in those sections must of necessity patronize the central plants. There is no point in Iowa more than seventy miles by rail from at least two central plants, and considerable quantities of cream are shipped out of the State to Minneapolis, Chicago, Omaha and St. Joseph, Mo. Considerable quantities are shipped into the State from Northern Missouri and from South Dakota and Northeastern Nebraska. The movement of cream on passenger trains in this State has become a matter of very great moment both to the railroads and to the larger creameries.

The combined efforts of the dairy forces, of the college, of this department, of the Farmers' Institutes of the State, and of the creameries themselves, have in the last several years very greatly improved existing conditions. The change from the whole-milk to the gathered cream system resulted disastrously to the quality and value of butter made, but gradually the quality has become better and the last year has seen a considerable improvement—partly because of legislation, but largely because of the efforts of the creameries themselves and still more for the reason that the shipment of cream long distances has been lessened in this State to a very marked degree. A continued improvement in the character of dairy buildings, machinery and surroundings is noted to a greater degree each year.

THE WORK OF ASSISTANT DAIRY COMMISSIONERS.

The work of the assistant dairy commissioners during the past twelve months has been along lines of sanitation, and of investigating the conditions in relation to the policies of the various creameries as affecting their profits or losses. Some astonishing things have been discovered in relation to the overrun. One of them is that very few creameries actually know what their overrun is. The books of various creameries show an overrun all the way from nothing at all to 30 per cent, and the butter shows an overrun from 10 to 25 per cent or more. It is quite evident that a difference of 5 per cent in the overrun of the average creamery, whose business is nearly $40,000, amounts to a very considerable sum of money and the efforts of this department have been to insist upon it that the buttermaker and secretary know actually what the overrun is, that it should be as high a figure as is consistent with honesty and safety under the laws and that it should be a real overrun and not an apparent one secured by low testing, or other means not legitimate. The work of the assistant commissioners is suggested more at length in the discussions following.

OLEOMARGARINE.

As suggested in report of last year, manufacturers of oleomargarine are more than ever pushing the sale of the uncolored product on its merits. While there are still innumerable instances where oleomargarine is sold or furnished to the consumer as butter, it is true that a very large number of retail dealers are attempting to sell oleomargarine for what it is, and in strict compliance with the law. The statistics given below show considerable increase in the manufacture of oleomargarine for the year ending June 30, 1907.

The following table shows the production of oleomargarine in the United States for the last six years. The year ends in each case June 30th:

1902	126,316,472
1903	71,804,102
1904	48,071,480
1905	49,880,982
1906	53,146,659
1907	68,988,639

The prevailing high price of butter for the last eighteen months has been a great factor in this increase, and the fact must be recognized that when butter retails at from thirty to thirty-five cents a pound the legitimate demand for oleomargarine is necessarily increased. This is particularly evidenced at the present writing (Nov. 1, 1907), by the increased number of retail dealers' licenses issued in this State.

The best argument at the command of the dealer in oleomargarine is the presence on the market of butter of poor quality. The next best argument is the presence of too many so-called pound bricks of butter actually weighing an ounce or more short in weight. The dealer in butter who sells a product of poor quality or a short weight package is the greatest enemy that the butter industry has at the present time. His practices, besides being dishonest, make possible too often successful competition by the dealer in oleomargarine.

Successful prosecutions for violation of the oleomargarine law have been undertaken at Centerville, Burlington and Waterloo, and one unsuccessful prosecution at Ottumwa.

SANITATION.

Section 2522 of the Code provides: "Every person or corporation, or the employe of such person or corporation, who operates a creamery, cheese or condensed milk factory, or re-works or packs butter, shall maintain his premises and utensils in a clean and hygienic condition. * * * Whoever shall violate any provisions of this section shall be punished by a fine of not less than twenty-five nor more than one hundred dollars, or by imprisonment in the county jail for not more than thirty days." Under this section, fines have been inflicted on one buttermaker and upon the secretary of another creamery. A careful reading of the above quoted statute shows that the responsibility for cleanliness in the creamery rests equally upon the buttermaker and his helpers, and the secretary, or manager, or proprietor. The assistant commissioners have done a great deal of effective work among the creameries by insisting in a great many cases upon a radical change of conditions on pain of prosecution, and this policy of the department will be further carried out in the future. There is never any excuse for unsanitary conditions in a creamery, and such conditions are the more inexcusable under present prosperous business conditions.

The law above quoted was intended to insure the consumer of Iowa butter that it is made in a cleanly place. A good many of our creameries were built a number of years ago and ought now to be replaced with new and more substantial and permanent buildings. A very large number of creameries have been this year replaced with buildings composed of buildings made with brick or cement, and the tendency towards better buildings is more marked every year.

There are two things absolutely essential to the highest degree of cleanliness and sanitation in every creamery. They are: First, a cement floor; second, proper drainage. Unfortunately, a great many creameries are so located that there is not sufficient fall to permit of proper drainage. Some of our creameries under such conditions have put in a septic tank and the results have been very successful. This department will be glad to furnish information and plans for such a system of caring for the drainage on request from officers of any creamery.

TESTING CREAM.

Innumerable complaints come to this department concerning the sampling and testing of cream by cream haulers, cream purchasing agents, the creameries themselves and nearly all of these complaints allege that the inaccuracies arise either from the desire to cheat the seller of cream either on weight or on test, or a desire to win away the patrons of a creamery by giving higher tests or higher prices than the facts or conditions warrant. The testing of cream may be, and usually is, as certainly correct as the weighing of it, but carelessness in sampling, inaccuracy in weighing the sample for the test, too high temperature of fat column when the test is read, and inaccurate measurement of the fat column, all lead to wrong results. The carelessness exhibited by a good many users of the Babcock tests is little short of actual criminality. Unfortunately, it is impossible under our present statute to convict the tester for such carelessness in the test. It is necessary to show that the inaccurate results arise from actual intention to deceive or fraud, and in most cases it is almost impossible to bring any positive, affirmative evidence of such intention, even though the results are clearly shown as they would be if such criminal intention were actually present. The dairy law requires the operator of the test to "produce correct measurements of butterfat." It also puts upon the operator "the burden of establishing the use of reliable tests and the results therefrom." This is another way of saying that if the patron sues the creamery man for shortage in tests and payment, the burden of proof is upon the operator of the test to show that the results arrived at were correct. Unfortunately the amounts involved are always so small that the expense of a suit prohibits bringing it.

Cream is the one product which the farmer sells of which he does not know the actual value with very close approximation. His other products, whether sold by weight or number, are such that he knows with very close accuracy what the weight or count should be, but usually when he sells his cream he not only doesn't know the weight of the cream, but is unable to ascertain the test even approximately, and he usually permits the buyer to fix the price. There are two ways in which he can protect himself. One is to learn how the sample must be taken in order to be accurate, and then insist that the sample shall be taken and the test made and read in his presence; the other is to secure a test machine and other necessary apparatus and chemicals to make the test and then weigh, sample and test all his cream before the same is sold, so that he will know accurately how many pounds of butterfat is delivered.

There have been serious suggestions that proper legislation be had and system devised for examination and license for users of the Babcock test. A part of the system would necessarily be authority lodged in some proper person for revocation of the license when it is shown that tests arrived at were not accurate. Whether such arbitrary regulation should be made is a question for consideration for dairy and cream people before the meeting of the legislature in 1909.

PURCHASE OR SALE OF UNWHOLESOME MILK OR CREAM.

(From Chapter 10, Title XXIV, Code as Amended.)

Section 4989. Sale of impure or skimmed milk—skimmed milk cheese—labeling—purchase of unwholesome milk or cream. If any person shall sell, exchange or expose for sale or exchange or deliver or bring to another, for domestic or potable use, or to be converted into any product of human food, any unclean, impure, unhealthy, adulterated, unwholesome or skimmed milk, or milk from which has been held back what is commonly known as strippings, or milk taken from an animal having disease, sickness, ulcers, abscess or running sore, or which has been taken from the animal within fifteen days before or five days after parturition; or if any person shall purchase, to be converted into any product of human food, any unclean, unhealthful, adulterated or unwholesome milk or cream, or shall manufacture any such milk or cream into any product of human food, * * * he shall be fined not less than twenty-five nor more than one hundred dollars, and be liable for double damages to the person or persons upon whom such frauds shall be committed. * * *

Attention is called to the fact that the above law provides the same penalty for the purchase by manufacturers of butter as for the sale of unwholesome milk or cream. Six successful prosecutions under this statute have been undertaken during the last year. The larger receivers of cream report that conditions have very greatly improved within the last twelve months. They have uniformly taken advantage of the law to press upon the shipper the absolute necessity of sending in cream that is fit for making into butter and the net results have been the improvement mentioned.

WATER IN BUTTER.

The increased activity of internal revenue officials among creameries has been one of the incidents of the last season. The presence of more than the legal maximum of 16 per cent of water in butter is so flagrant an offense, and the sale of such butter such an inexcusable blunder, that one can not sympathize much with the creamery manager or creamery buttermaker who gets into the net of the internal revenue official. Despite the efforts of the dairy papers, the officers of this department, and others interested in the welfare of the industry, the buttermaker who actually tests every churning of his butter for water is the exception and not the rule; and the manager who insists that his buttermaker shall so test every churning on pain of discharge has not been discovered.

It may be of service to have it stated here that a number of Iowa creameries have been assessed from $250 to much greater amounts, which they have paid; that an official of another state paid $1,600 for sale of butter containing too much water; and that practically all makes of butter are being examined in the markets by internal revenue officials to see if they violate the law; that if the make of a creamery shows more than 16 per cent of water at any time it is almost certain to be discovered and the penalty inflicted upon the creamery management; that the reason why these cases and penalties are not more exploited in the dairy papers is because the penalties are inflicted by the internal revenue officials in the way of license fees required and payments of tax at the rate of ten cents a pound upon the butter seized, and there is no publicity as there would be if the creamery manager were prosecuted and fined in open court. However, those who imagine that the internal revenue officials are not active in the enforcement of this law are wholly deceived as to the facts. The law is a proper one and the department having its enforcement is competent and energetic.

The effect of recent agitation for a proper amount of overrun in creameries has resulted in too many cases in efforts on the part of the buttermaker to increase the amount of water present and that without taking any pains to know how much water is present in the butter when it is shipped to market. Assistant dairy commissioners have tested butter at various creameries and have found butter containing all the way from 7 per cent to 28 per cent of water, and in every case where abnormal quantities of water have been discovered, the buttermaker was wholly ignorant of the fact and asserted that his overrun as shown by the secretary's books was only about what it ought to be. Such condition of ignorance will certainly result in the payment of penalties for violation of the national law relating to water in butter.

There are three forms of apparatus now sold by all creamery supply firms for determining the amount of water in butter—the Gray's moisture test, the Irish test and the butter test bottle. None of these pieces of apparatus is found to give absolutely accurate results in the hands of buttermakers generally, but they do give results sufficiently accurate so that the buttermaker can avoid loss in the way of small overrun on the one hand and penalties for manufacture of butter adulterated with water on the other.

The creamery manager should furnish the buttermaker with proper apparatus for testing his butter, and should then insist, on pain of discharge, that every churning of butter be tested for water content before it leaves the factory. The business of the average creamery in this State amounts to about $10 or $12 a day, or $30,000 or $40,000 a year. A loss of even one per cent makes a considerable sum of money. The detection of a single shipment of butter containing too much moisture may cost the creamery a very large sum of money, and to neglect precautions against possibilities of this kind amounts to a betrayal of the interests of the patrons of the creamery.

COAL TAR COLORS IN BUTTER.

For fifteen or twenty years coal tar colors have been used to a very large extent in the manufacture of butter. There has always been more or less of a prejudice existing in the minds of a good many people against the use of these colors in any food product. There has never been a prosecution for sale of butter containing one of these products in any state so far as known to this department, and there is not a particle of evidence that butter so colored ever did injure the consumer or that it could injure him. However, it is perfectly well known that certain coal tar colors used in other food products were of a slightly poisonous nature, and one or two of the States, for the sake of consistency, have by law prohibited the use of coal tar colors in every food product. Under authority of the national food law the Board of Food and Drug Inspection on July 13, 1907, in Food Inspection Decision 76, says: "The use in food for any purpose of any mineral dye or any coal tar dye, except those coal tar dyes hereinafter listed, will be grounds for prosecution. Pending further investigations now under way and the announcement thereof, the coal tar dyes hereinafter named, made specifically for use in foods, may be used in foods." The colors named as permitted in food products are none of them colors which have been used or probably would be used in a butter color, so that the practical effect of this decision is to prohibit the use of coal tar colors in butter. The national law is a law relating to interstate commerce, and it applies to practically all the butter manufactured in creameries in this State for the reason that ninety per cent of it is shipped to points outside the State of Iowa. It is therefore quite apparent that coal tar colors in butter can no longer be used without fear of prosecution by the Board of Food and Drug Inspection at Washington.

There is nothing in the State food or dairy law and nothing in the national law to prevent the coloring of butter with harmless color, and buttermakers and creamerymen should secure from manufacturers of color offered to them a guaranty not only that the color itself is legally sold under the food law, but that it is such a color as may be legally used in the butter to be made.

TUBERCULOSIS.

Reference is again made to law requiring the pasteurization of skimmed milk before the same is returned by the creamery to the patrons.

The law reads as follows:

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. That every owner, manager, or operator of a creamery shall before delivering to any person any skimmed milk cause the same to be pasteurized at a temperature of at least one hundred and eighty-five (185) degrees Fahrenheit.

SEC. 2. Whoever violates the provision of this act shall, upon conviction, be liable to a fine of not less than twenty-five dollars nor more than one hundred dollars."

The following is a quotation from Bulletin No. 92, Iowa Experiment Station:

"With the probable exception of hog cholera, there is no disease more dreaded among swine growers than tuberculosis. The disease is of frequent occurrence and according to statistics the numbers of animals so affected is annually on the increase, particularly in dairy sections. Packers are most rigid in their inspections in an attempt to protect the pork consuming public, even going so far as not to buy hogs from localities known to have had a considerable number of swine affected with the disease. The carcass of an infected animal is utterly unfit for human food. Compared with this phase of the subject the thrift of the hogs is unimportant to say the least, as this only reduces the feeders' profit. It is the health of the public that must be guarded. A knowledge of the source of infection and of the extent to which the disease is rapidly spreading is, therefore, of primary importance to those engaged in checking its advance.

"It is known that the same bacilli which produces tuberculosis in cattle also produces the disease in hogs. The exact extent to which cattle are responsible for its presence among hogs is, however, not known. Direct hereditary transmission among swine rarely ever occurs according to European investigators, who are unanimous in the theory that the disease is caused by infection of dairy products containing the tubercle bacilli. Instances are common where droves of hogs, which at some time in their lives had been fed whole milk, skim milk or buttermilk, when slaughtered, showed a large proportion of the number to be infected with tuberculosis. This is proved by the fact that tuberculosis prevails mostly where the dairy industry is the most extensive, namely, northern Germany and Denmark. It is a difficult matter to find hogs raised under common farm conditions that have not been at some time in their lives fed cow's milk. It is thus apparent that the consensus of opinion has some foundation when it is generally believed that cow's milk is responsible for the rapid spread of this disease to the swine herds of the country.

"The subjecting of milk intended for hog feeding to 176 degrees of heat, or 'pasteurization,' to kill any tubercle bacilli that might be present is now a common practice on the modern dairy farm and at the leading creameries. There is a desire with many to know whether there is any practical necessity of this pasteurization in this State. The only answer to the question is the results of actual experimental investigations into the transmissibility of the disease to hogs from cow's milk."

An experiment in feeding pasteurized milk to two separate lots of pigs and milk infected with tuberculosis germs to two other lots was carried on for a period of about eight months. The pigs at the beginning were free from tuberculosis. Of the twenty pigs fed infected milk every one was found upon slaughter to have acquired disease of tuberculosis, while of the twenty pigs fed on pasteurized milk only two showed slight traces of the disease.

The swine industry in this State is of such great importance that every effort ought to be made to protect it from loss by disease. The pasteurization of skimmed milk at the creamery, as shown by the foregoing experiment, is effective in preventing the spread of tuberculosis among swine. For a creamery to refuse to obey the law requiring such pasteurization is to disregard the interests of the whole community, and those of the patrons of the creamery in particular. A considerable number of prosecutions has been undertaken in cases where the creameries have not been pasteurizing the skimmed milk. The matter is of such very great importance that this department will continue to make prosecutions for failure to comply with this statute wherever it is possible to secure evidence of such violation.

During the year there have been fines inflicted for violation of the statute in relation to the pasteurization of skimmed milk upon creamery managers at Ackley, Harlan, Bristow, Ladora and Ottoson.

BUTTER PRICES.

Below is given a table showing New York prices on butter of the highest grade by months for the last eleven years. The average price for 1896 was about the same as that for 1897 given below and these two years mark the lowest prices for butter in the last twenty years.

TABLE No. 1.

Showing average monthly price of fancy western creamery butter in New York market.

Month	Twelve months ending Nov. 1, 1897	Twelve months ending Nov. 1, 1898	Twelve months ending Nov. 1, 1899	Twelve months ending Nov. 1, 1900	Twelve months ending Nov. 1, 1901	Twelve months ending Nov. 1, 1902	Twelve months ending Nov. 1, 1903	Twelve months ending Nov. 1, 1904	Twelve months ending Nov. 1, 1905	Twelve months ending Nov. 1, 1906	Twelve months ending Nov. 1, 1907
November	$ .2112	$ .2325	$ .2337	$ .2600	$ .2487	$ .2412	$ .2650	$ .2317	$ .2481	$ .2350	$.2762
December	.2250	.2290	.2160	.2720	.2540	.2510	.2920	.2423	.2688	.2480	.3164
January	.1900	.2040	.1975	.2650	.2262	.2425	.2762	.2270	.2910	.2650	.3080
February	.2050	.2042	.2100	.2500	.2250	.2862	.2600	.2517	.3218	.2709	.3254
March	.1900	.1937	.2075	.2550	.2212	.2840	.2860	.2452	.2807	.2700	.3061
April	.1880	.1980	.1962	.1960	.2099	.2825	.2725	.2284	.3008	.2188	.3069
May	.1530	.1580	.1790	.2012	.1900	.2275	.2200	.2012	.2371	.2017	.2501
June	.1500	.1687	.1881	.1950	.1925	.2195	.2160	.1803	.2049	.2022	.2360
July	.1500	.1687	.1835	.1960	.1960	.2131	.2012	.1767	.2056	.2062	.2481
August	.1675	.1860	.2000	.2100	.2050	.1990	.1940	.1793	.2111	.2257	.2488
September	.1930	.2025	.2262	.2150	.2110	.2170	.2075	.1947	.2068	.2462	.2781
October	.2290	.2235	.2400	.2190	.2200	.2362	.2100	.2095	.2184	.2611	.2915
Aver. val. per lb. per year	$ .1885	$ .1971	$ .2065	$ .2278	$ .2165	$ .2416	$ .2417	$ .2140	$ .2487	$ .2375	$.2826

CITY MILK INSPECTION.

The growth of the city milk inspection in this State is indicated by the following table, showing the number of permits for milk dealers issued in the years from 1896 to 1907. The years end in every case on the 4th of July:

1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
566	620	574	676	714	784	821	783	780	827	893	1,006

Cities	Pop. 1905	Inspectors
Burlington	25,318	Oscar C. Hoerr
Cedar Rapids	28,759	Chas. B. Thomas
Clinton	22,756	Dr. J. W. Griffith
Council Bluffs	25,321	H. A. Lennox
Davenport	39,797	H. J. High
Des Moines	75,626	J. P. Morey
Dubuque	41,941	Harry Barmierier
Fort Dodge	14,369	D. C. Benjamin
Keokuk	14,604	A. J. Anderson
Marshalltown	12,045	Dr. E. M. Singleton
Muscatine	15,087	Dr. John Tillie
Ottumwa	20,181	E. B. Hill
Sioux City	40,952	J. E. Huffman
Waterloo	18,071	Theo. Peek
	394,737	

The inspection and tests carried on by this department in fourteen cities lead to the belief that there is very little adulteration of milk by skimming or watering, and little adulteration with chemical preservatives or coloring matters. In the city of Des Moines during the summer months the chemist of this department has analyzed over six hundred samples of milk secured from city milk dealers and not a single case of the use of preservatives has been discovered. Newspaper accounts of extensive adulterations of milk are not warranted by any known facts.

The inspection carried on by this department does not extend to the farms or the cows that produce the milk sold in these cities, and hence does not give any assurance that the milk sold is produced from healthy animals nor that it is handled in a cleanly manner up to the time that it appears for sale to the consumer. Neither the funds nor the authority given this department enable us to carry on any such inspection.

CENTRALIZATION OF CREAMERIES.

It is impossible to give any inclusive and exclusive definition of the centralized creamery in this State for the reason that the State possesses all the varieties of creameries that exist anywhere. There are in the State ninety plants that answer affirmatively to the question, "Do you receive any cream by rail?" It is believed that about half this number actually receive one-fourth or more of their butterfat by rail. Twenty-one of the largest centralizing plants report that they make 24,357,637 pounds of butter. If we include another score of the smaller centralizing plants, they doubtless make one-third of the creamery butter manufactured in this State. Attention is called to the fact that the numbers given in the tables in this report show only the place of manufacture of the butter and not the place where the cows are kept or the butterfat actually produced.

Another interesting fact shown by a study of the individual creamery reports is that in the smaller local creameries each patron produces about a thousand pounds of butter, while the centralized creameries appear to make from five hundred to seven hundred pounds of butter per patron which they report. The question is asked all creameries, "How many patrons did you have on July 1, 1907?" The patronage of the creamery with fifteen hundred to three thousand patrons is naturally fluctuating, but the number on the books any one day ought to represent about the average number for the year. It is hardly possible that the centralizing creameries particularly attract the small producer, and just why their patrons should produce only half or three-fourths as much as the patrons of the local creameries is a question that this department is unable to answer.

This department is bound to accept as correct the statements made by creamery managers as to the number of patrons and the number of pounds of butter made, for the reason that the necessary records of the creamery are at hand. The number of pounds of butter made by the 21 creameries included in the above paragraph divided by the number of the patrons they reported as being on their books July 1st gives 590 pounds as the average amount of butter produced by each patron. The average for the State is more than a thousand pounds per patron as shown by Table 2 of this report. This low average per patron and the consequent low apparent production per cow for the State, which appears from an inspection of the same table, is occasioned by the extremely low figures given by the central plants, which report about one-third of the butter of the State, but which report one-half the number of patrons and about one-half the cows embraced in the figure given in Table 2. The low production per patron by the centralizers is uniformly low and is about half as much as the production in the best dairy counties. The tables given below are first figures reported by three central plants in different parts of the State; second the statistics compiled in Tables 1 and 2 of this report for the counties indicated:

Number of Patrons	Number Pounds of Butter	Average Pounds
3,200	1,765,659	551
3,800	1,739,019	457
900	455,358	505

County	No. of creameries	No. of patrons	No. of cows	No. of lbs. of butter made	Av. lbs. butter per cow
Buchanan	7	1,273	13,790	1,570,562	114
Chickasaw	10	1,626	13,719	1,859,679	135
Delaware	17	2,223	18,433	2,875,738	156
Fayette	20	2,615	23,870	3,758,482	154
Kossuth	19	1,708	14,366	2,226,227	154
Palo Alto	14	1,317	12,933	1,599,935	123
Winneshiek	12	2,684	21,372	2,422,228	113
Total	99	13,446	118,483	16,312,851	137

Average number of cows per patron	8
Average number pounds of butter per creamery	174.877
Average number pounds of butter per patron	1,212

SHIPPING RATES ON CREAM.

More than a year ago creameries in the northern part of Iowa raised strenuous objections to the extremely low rates on cream which certain railroads were making to Chicago. The net results of these rates was that the Chicago centralizing plant could get butterfat into Chicago in the shape of cream for less money than the State of Iowa could ship butterfat to the same point after it was made. On representations made by them, in which the dairy commissioner joined, these rates to Chicago were raised to rates practically equivalent to rates for like distances obtaining inside the State of Iowa, though not all the railroads joined in the raise of rates. Later an attempt was made by the Beatrice Creamery Company to have rates in Iowa lowered by authority of the Railroad Commission. This effort was opposed by the dairy commissioner and the rates from Iowa have remained the same as they have been for a number of years heretofore.

It is apparent that a large number of producers of cream in this State are, under present conditions, compelled to transport their cream to market from a distance that precludes a possibility of any transportation other than rail transportation. As heretofore suggested, there is no point in Iowa further than seventy miles from two or more centralizing plants, and hence it is apparent at once that the necessity for a low rate for cream shipment does not obtain over greater distance than suggested. Efforts to reduce cream rates have been along the line of reducing the rate for long distances. There is wide-spread movement on the part of the centralized creameries all over the west to maintain as low rates as possible, or to secure lower ones where the tariff equal to the Iowa rates obtains. There is a movement equally wide-spread on the part of railroads to make a higher rate for cream than for milk and thereby to raise rates on shipments of cream for buttermaking purposes, so that the matter is one which has been brought to the attention of the Interstate Commerce Commission and the Railroad Commission in Minnesota, Nebraska, Iowa and Wisconsin, and indeed has got into federal courts on a petition for injunction against raising rates.

Different conditions may exist elsewhere. Iowa conditions do not demand a rate on cream shipments different from rates on other products which naturally go by express. The shipment of cream long distances inevitably causes a loss in quality and value of cream, which loss is inevitably visited upon the seller of that cream. To make a rate of 21 to 22 cents for seventy-five miles and a rate of about 30 cents for two hundred miles is unfair as between two persons, one of whom wishes to ship the shorter distance and the other who wishes to ship the longer distance. To make an extremely low rate for greater distances still gives an advantage which is not shared by the purchaser in any degree, directly or indirectly, if we may argue from experience in this State and elsewhere. The majority of creamery patrons already have a market at their doors without shipping by rail. The producer of cream who has no such market is entitled to a fair rate on his cream in exactly the same sense that he is entitled to a fair rate on his grain or live stock, but neither he nor the plant to which he ships is entitled to have his product carried free, nor to have it carried at a rate which is out of proportion to fair rates on other products. To so reduce rates upon cream shipments is to enable concerns with large capital and superior business resources to monopolize in large proportion the dairy business and will be disastrous to the dairy business of this State. Dairy people of this State should understand that this is a question which will continue to be agitated and will take such action as seems to them proper as safeguarding the interests of the business as a whole.

TABLE No. III.

Table showing number of hand separators, number of patrons and number of cows.

County	No. of creameries reporting hand seperators	Receive cream by rail	Hand separators reported	No. of creameries reporting patrons and cows	No. of patrons reported	No. of cows reported.
Adair	5	1	1,003	5	1,139	6,740
Adams	3	--------	293	3	312	2,472
Allamakee	8	--------	1,441	8	1,846	13,074
Appanoose	--------	--------	--------	--------	--------	--------
Audubon	7	--------	1,020	8	1,351	11,200
Benton	4	1	488	4	553	3,600
Black Hawk	10	1	399	15	1,729	13,256
Boone	1	--------	59	1	59	309
Bremer	4	--------	119	23	1,786	19,884
Buchanan	5	--------	270	7	1,273	13,790
Buena Vista	6	2	1,063	6	1,130	10,162
Butler	12	1	595	19	2,076	18,499
Calhoun	4	2	2,759	4	3,604	39,020
Carroll	5	2	1,877	4	1,742	15,932
Cass	2	1	192	2	192	1,520
Cedar	4	--------	165	4	271	2,247
Cerro Gordo	4	3	1,133	4	1,336	10,777
Cherokee	2	--------	140	2	290	1,800
Chickasaw	7	--------	496	10	1,626	13,719
Clarke	--------	--------	--------	--------	--------	--------
Clay	7	1	740	7	990	8,225
Clayton	10	1	1,758	11	2,873	21,528
Clinton	6	3	720	6	514	3,160
Crawford	1	1	1,500	1	1,241	10,000
Dallas	4	2	833	4	912	4,100
Davis	--------	--------	--------	--------	--------	--------
Decatur	--------	--------	--------	--------	--------	--------
Delaware	12	1	1,030	17	2,223	18,433
Des Moines	--------	--------	--------	--------	--------	--------
Dickinson	6	1	566	6	612	5,165
Dubuque	15	2	2,080	20	2,827	20,945
Emmet	6	1	327	7	485	4,229
Fayette	7	1	835	20	2,615	23,870
Floyd	5	1	373	5	795	5,621
Franklin	4	1	351	5	1,179	8,855
Fremont	--------	--------	--------	--------	--------	--------
Greene	1	--------	15	1	59	500
Grundy	7	2	639	8	1,069	8,636
Guthrie	6	1	586	7	1,090	8,496
Hamilton	4	2	492	3	585	3,700
Hancock	7		807	7	907	7,686
Hardin	11	2	1,128	11	1,512	12,494
Harrison	--------	--------	--------	--------	--------	--------
Henry	--------	--------	--------	--------	--------	--------
Howard	5	--------	367	6	886	5,600
Humboldt	8	1	629	8	727	6,445
Ida	1	1	386	1	393	2,500
Iowa	7	--------	297	7	613	4,711
Jackson	11	1	1,524	11	1,748	13,506
Jasper	2	--------	93	2	152	1,195
Jefferson	3	1	396	3	1,457	1,940
Johnson	--------	--------	--------	--------	--------	--------
Jones	11	1	1,504	11	2,113	19,042

TABLE No. III—CONTINUED.

County	No. of creameries reporting hand separators	Receive cream by rail	Hand separators reported	No. of creameries reporting patrons and cows	No. of patrons reported	No. of cows reported
Keokuk						
Kossuth	18		1,143	19	1,708	14,366
Lee	1	1	1,500	1	1,750	12,250
Linn	12	1	1,770	12	2,915	24,802
Louisa						
Lucas						
Lyon	1	1	50	2	575	3,200
Madison						
Mahaska	2	2	350	2	720	4,000
Marion	1	1	450	1	450	2,000
Marshall	2	1	321	3	545	3,880
Mills						
Mitchell	10		650	10	1,826	13,865
Monona	1	1	141	1	147	950
Monroe	1	1	90	1	130	788
Montgomery						
Muscatine	1		45	1	130	800
O'Brien	5	3	856	4	649	6,000
Osceola	4	1	495	4	528	3,700
Page	1	1	1,750	1	1,900	15,000
Palo Alto	12		482	14	1,317	12,933
Plymouth	3	1	544	4	655	5,725
Pocahontas	4	1	489	3	449	3,800
Polk	4	5	5,900	4	5,910	42,250
Pottawattamie	1	1	275	1	300	2,500
Poweshiek	5	3	1,005	5	1,665	10,750
Ringgold						
Sac	8	3	905	8	961	7,600
Scott	2	2	580	2	653	4,840
Shelby	6	1	650	5	591	4,776
Sioux	6	2	1,523	6	1,593	12,686
Story	9	1	610	9	1,093	7,372
Tama	3	1	550	3	525	2,300
Taylor	2	2	1,998	2	1,998	15,000
Union	2	1	2,075	2	2,150	17,400
Van Buren						
Wapello	2	1	1,214	2	1,184	10,600
Warren						
Washington	1		100	1	100	800
Wayne	1	1	1,700	1	1,700	10,000
Webster	1	1	800	1	900	8,000
Winnebago	4		536	6	1,150	11,566
Winneshiek	11	1	1,773	12	2,684	21,372
Woodbury	1	2	6,000	1	6,200	40,000
Worth	7		534	7	705	5,110
Wright	6	1	864	6	857	6,265
Total	421	90	74,906	491	101,011	780,779

Table showing number of pounds of milk received, number of pounds of cream received, pounds of butter made and pounds sold to patrons in Iowa so far as reported by the creameries.

County	Number reporting	Pounds of milk received	Pounds of cream received	Pounds of butter made	Pounds sold to patrons	Pounds sold in Iowa
Adair	5	1,277,087	2,781,215	1,041,147	20,050	19,520
Adams	3	506,182	594,456	206,435	7,117	3,192
Allamakee	8	----------	7,022,104	1,911,747	24,304	40,333
Appanoose	---	----------	----------	----------	----------	----------
Audubon	8	13,416,647	3,104,545	1,637,933	65,592	16,630
Benton	4	1,162,625	1,731,133	518,946	2,285	7,050
Black Hawk	15	37,535,478	3,214,654	2,144,320	149,470	377,579
Boone	1	335,820	49,327	27,204	1,354	2,850
Bremer	24	70,011,567	633,457	3,101,934	248,109	97,509
Buchanan	7	31,479,929	563,744	1,570,562	122,608	69,834
Buena Vista	6	143,167	3,680,180	1,067,995	15,072	3,812
Butler	19	40,334,333	2,296,658	2,308,882	158,436	87,719
Calhoun	4	2,264,004	4,168,793	1,987,433	3,560	22,179
Carroll	5	18,000	3,960,209	1,490,880	7,130	9,680
Cass	2	----------	652,920	210,034	520	952
Cedar	4	922,664	787,583	279,616	6,054	58,151
Cerro Gordo	5	1,158,860	4,389,613	1,145,510	9,053	78,949
Cherokee	2	5,500	326,000	120,000	6,000	3,000
Chickasaw	10	24,335,101	2,544,612	1,859,679	137,874	24,680
Clarke	---	----------	----------	----------	----------	----------
Clay	7	5,360,170	2,135,751	851,855	43,475	11,801
Clayton	11	15,018,828	7,400,860	2,694,935	65,673	38,787
Clinton	7	2,831,141	1,150,310	418,039	14,299	2,494
Crawford	1	----------	1,767,372	771,354	----------	----------
Dallas	5	1,487,625	1,664,663	648,629	12,584	45,031
Davis	---	----------	----------	----------	----------	----------
Decatur	---	----------	----------	----------	----------	----------
Delaware	17	35,465,198	4,808,916	2,875,738	200,451	123,407
Des Moines	---	----------	----------	----------	----------	----------
Dickinson	6	757,998	1,911,389	601,747	23,887	16,311
Dubuque	19	18,867,113	5,880,091	2,416,473	79,765	290,418
Emmet	7	6,622,133	874,827	576,907	45,368	2,710
Fayette	20	61,827,865	3,001,831	3,758,482	261,474	144,080
Floyd	5	1,073,933	2,729,250	795,327	52,801	16,944
Franklin	5	4,709,391	2,280,170	887,406	28,671	55,420
Fremont	---	----------	----------	----------	----------	----------
Greene	1	527,353	10,397	13,124	522	----------
Grundy	8	16,895,353	2,590,335	1,472,535	77,711	64,203
Guthrie	7	4,555,077	2,711,698	1,051,837	31,447	24,478
Hamilton	4	4,705,429	1,098,268	557,215	8,384	1,628
Hancock	7	1,904,459	2,922,845	996,425	29,845	9,430
Hardin	11	8,667,277	4,172,173	1,583,709	93,698	30,425
Harrison	---	----------	----------	----------	----------	----------
Henry	---	----------	----------	----------	----------	----------
Howard	6	6,431,512	2,277,479	787,094	34,856	12,566
Humboldt	8	3,165,297	1,947,578	692,672	45,604	10,763
Ida	1	96,000	849,720	326,714	1,470	----------
Iowa	7	8,189,463	981,825	609,684	58,561	160,969
Jackson	11	6,714,977	4,243,470	1,475,839	31,980	25,348
Jasper	2	1,990,579	362,411	182,990	9,859	44,678
Jefferson	3	847,948	1,466,524	362,496	10,060	42,104
Johnson	---	----------	----------	----------	----------	----------
Jones	11	23,341,426	5,867,730	2,859,316	115,802	91,389

County	Number reporting	Pounds of milk received	Pounds of cream received	Pounds of butter made	Pounds sold to patrons	Pounds sold in Iowa
Keokuk	----	----------	----------	----------	----------	----------
Kossuth	20	18,912,437	4,504,182	2,226,227	165,097	105,233
Lee	1	200,000	1,440,000	----------	----------	----------
Linn	13	16,589,392	5,226,835	1,897,290	53,732	363,408
Louisa	----	----------	----------	----------	----------	----------
Lucas	----	----------	----------	----------	----------	----------
Lyon	2	1,454,170	1,094,938	414,217	4,000	11,000
Madison	----	----------	----------	----------	----------	----------
Mahaska	2	----------	829,008	250,483	43,586	34,628
Marion	1	----------	446,000	160,500	----------	15,616
Marshall	3	1,728,653	1,412,672	439,678	12,135	120,282
Mills	----	----------	----------	----------	----------	----------
Mitchell	10	324,495	6,761,631	1,674,937	73,754	259,297
Monona	1	----------	291,137	98,408	205	117
Monroe	1	601,069	161,272	70,715	1,178	14,794
Montgomery	----	----------	----------	----------	----------	----------
Muscatine	1	----------	213,577	51,775	1,570	18,700
O'Brien	5	209,708	2,367,228	918,152	11,564	11,362
Osceola	5	306,657	1,354,818	405,168	7,174	4,206
Page	----	----------	----------	----------	----------	----------
Palo Alto	14	24,097,788	1,641,510	1,599,935	165,817	45,911
Plymouth	4	97,606	1,723,547	648,922	13,509	15,956
Pocahontas	4	----------	1,033,179	354,628	9,381	4,135
Polk	4	877,590	17,107,117	4,172,472	----------	983,377
Pottawattamie	1	1,500,000	----------	60,000	----------	60,000
Poweshiek	5	378,831	6,795,898	1,264,155	3,600	212,300
Ringgold	----	----------	----------	----------	----------	----------
Sac	8	969,747	2,269,936	806,415	28,074	5,320
Scott	2	10,401	748,038	255,537	250	163,520
Shelby	6	2,236,317	1,712,378	582,288	21,303	5,782
Sioux	6	----------	4,399,703	1,743,092	22,316	15,569
Story	9	11,680,530	1,542,802	1,012,259	91,628	20,599
Tama	3	551,575	741,437	242,981	1,842	5,101
Taylor	2	----------	5,300,000	1,383,859	11,000	13,624
Union	2	4,200	3,160,611	981,067	1,608	2,778
Van Buren	----	----------	----------	----------	----------	----------
Wapello	2	650,658	1,212,442	318,074	5,400	18,179
Warren	----	----------	----------	----------	----------	----------
Washington	1	----------	300,000	82,210	----------	12,210
Wayne	1	----------	2,244,920	671,976	----------	12,000
Webster	1	----------	1,700,000	455,358	----------	----------
Winnebago	7	19,673,586	2,114,211	1,496,772	106,458	22,537
Winneshiek	12	----------	8,913,000	2,422,028	16,692	16,680
Woodbury	1	4,000,000	15,006,450	6,200,376	4,000	226,000
Worth	7	6,908,770	1,881,783	843,633	54,229	7,284
Wright	6	512,117	8,014,923	819,596	23,911	47,120
Total	503	581,436,806	225,276,278	89,926,982	3,317,848	5,063,625

CREAMERY BUTTER MANUFACTURED.

In the following table is given the amount of creamery butter made for the respective years. The amounts are partly estimated in the following manner:

The average amount obtained by dividing the total butter by the number of creameries so reporting is multiplied by the total number of churning stations. It has never been possible to get a full and complete report of absolutely all the creameries. In making average mentioned above the amount made by the large centralizing creameries and the number of them is subtracted before the average is attempted, so that there are no unusual or uncertain factors in the figures given. The make of the centralizing creameries is, however, included in the total:

1897	88,900,000
1898	87,704,214
1899	87,972,470
1900	84,965,062
1901	82,706,944
1902	77,885,696
1903	64,565,970
1904	70,000,000
1905	82,707,588
1906	91,202,354
1907	91,164,363

COMPARISONS.

	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
Total No. of creameries and skim sta.'s	891	954	967	994	960	919	792	691	655	596	594
Ownership.											
Individual	504	516	501	524	497	377	306	242	206	190	187
Co-operative	349	349	349	364	360	376	350	335	316	319	319
Stock company	37	88	116	105	102	165	135	113	132	86	87
State property	1	1	1	1	1	1	1	1	1	1	1

RAILROAD BUTTER SHIPMENTS.

The following table shows the number of pounds of butter, net,shipped from each county in the State to points outside the State, which is found by subtracting sixteen per cent of the gross weight as reported by the railroads of the State. This department is under obligations to the freight officials of the different railroads for furnishing us these figures:

Table showing net pounds of butter shipped out of the state, as reported by the railroads, for the year ending September 30, 1907.

Counties	1906	1907	Increase	Decrease
Adair	1,079,890	973,566	------------	106,324
Adams	85,444	------------	------------	85,444
Allamakee	1,468,626	1,572,193	103,567	------------
Appanoose	32,797	35,868	3,071	------------
Audubon	1,186,008	1,124,306	------------	61,702
Benton	793,839	241,756	------------	552,083
Black Hawk	1,480,132	969,073	------------	511,059
Boone	53,466	115,250	61,784	------------
Bremer	2,473,678	2,773,412	299,734	------------
Buchanan	3,098,132	1,886,103	------------	1,212,029
Buena Vista	1,321,824	1,128,072	------------	193,752
Butler	2,232,228	1,722,565	------------	510,663
Calhoun	1,531,481	1,400,018	------------	131,466
Carroll	2,020,441	1,888,055	------------	132,386
Cass	286,452	203,379	------------	83,073
Cedar	290,940	177,725	------------	113,215
Cerro Gordo	884,721	1,185,823	301,102	------------
Cherokee	612,881	568,939	------------	43,942
Chickasaw	2,468,370	2,056,017	------------	412,353
Clarke	10,967	11,051	84	------------
Clay	1,218,797	935,814	------------	282,983
Clayton	2,373,250	2,418,368	45,118	------------
Clinton	1,137,963	1,019,196	------------	118,767
Crawford	1,093,109	942,591	------------	150,518
Dallas	647,464	937,224	289,760	------------
Davis	------------	546	546	------------
Decatur	14,496	163	------------	14,333
Delaware	2,740,122	2,799,336	59,214	------------
Des Moines	250,565	259,284	8,719	------------
Dickinson	729,938	583,516	------------	146,422
Dubuque	2,271,330	2,223,196	------------	48,134
Emmet	644,165	771,489	127,324	------------
Fayette	2,766,049	2,517,736	------------	248,313
Floyd	777,425	761,792	------------	15,633
Franklin	122,854	588,481	465,627	------------
Fremont	------------	5,716	5,716	------------
Greene	137,579	80,352	------------	57,227
Grundy	844,965	895,148	50,183	------------
Guthrie	896,143	864,650	------------	31,493
Hamilton	1,400,683	874,014	------------	526,669
Hancock	888,937	963,934	74,997	------------
Hardin	1,784,853	1,728,263	------------	56,590
Harrison	36,345	26,788	------------	9,557
Henry	12,458	38,620	26,162	------------
Howard	806,384	794,768	------------	11,616
Humboldt	657,326	684,712	27,386	------------
Ida	431,692	277,505	------------	154,187
Iowa	653,054	246,739	------------	406,315
Jackson	1,594,125	1,592,207	------------	1,918
Jasper	87,169	126,772	39,603	------------
Jefferson	146,734	134,599	------------	12,135
Johnson	43,250	21,679	------------	21,571
Jones	3,752,833	4,630,275	877,442	------------
Keokuk	194,030	40,305	------------	153,725
Kossuth	2,423,053	1,758,215	------------	664,838
Lee	3,993,365	3,503,813	------------	489,552
Linn	1,734,959	1,607,382	------------	127,577
Louisa	14,009	8,217	------------	5,792
Lucas	------------	------------	------------	------------
Lyon	1,016	------------	------------	1,012
Madison	------------	3,561	3,561	------------

Counties	1906	1907	Increase	Decrease
Mahaska	61,775	184,541	122,766	
Marion	165,526	135,063		30,463
Marshall	387,086	393,076	5,990	
Mills	13,440	8,355		5,085
Mitchell	1,582,822	1,673,441	90,619	
Monona	121,596	231,700	110,104	
Monroe	35,884	33,474		2,410
Montgomery				
Muscatine	39,382	29,632		9,750
O'Brien	702,789	410,898		221,891
Osceola	207,138	312,949	105,811	
Page	645,633	644,664		969
Palo Alto	2,303,861	1,147,832		1,156,029
Plymouth	968,641	716,375		352,266
Pocahontas	622,391	480,291		142,100
Polk	5,117,540	4,790,804		326,736
Pottawattamie	284,351	5,478		279,873
Poweshiek	85,262	274,875	189,613	
Ringgold	160,625	499		160,126
Sac	936,510	688,747		247,763
Scott	367,482	1;577,194	1,209,712	
Shelby	574,071	504,279		69,792
Sioux	1,762,771	1,845,878	83,107	
Story	850,053	1,037,671	187,618	
Tama	386,111	354,755		31,356
Taylor	1,289,519	1,304,194	14,675	
Union	1,383,386	1,285,826		97,560
Van Buren	27,626	18,390		9,236
Wapello	408,224	635,862	227,638	
Warren	2,966	945		2,021
Washington	41,595	66,029	24,434	
Wayne	996,758	926,748		70,010
Webster	643,096	656,531	13,435	
Winnebago	1,426,005	1,342,868		83,137
Winneshiek	1,957,822	1,866,537		91,285
Woodbury	6,342,346	5,965,465		376,881
Worth	768,180	1,325,380	557,200	
Wright	1,185,815	1,113,957		71,858
Total	98,184,607	92,174,776	5,813,422	11,823,253

Net decrease, 6,009,831 pounds.

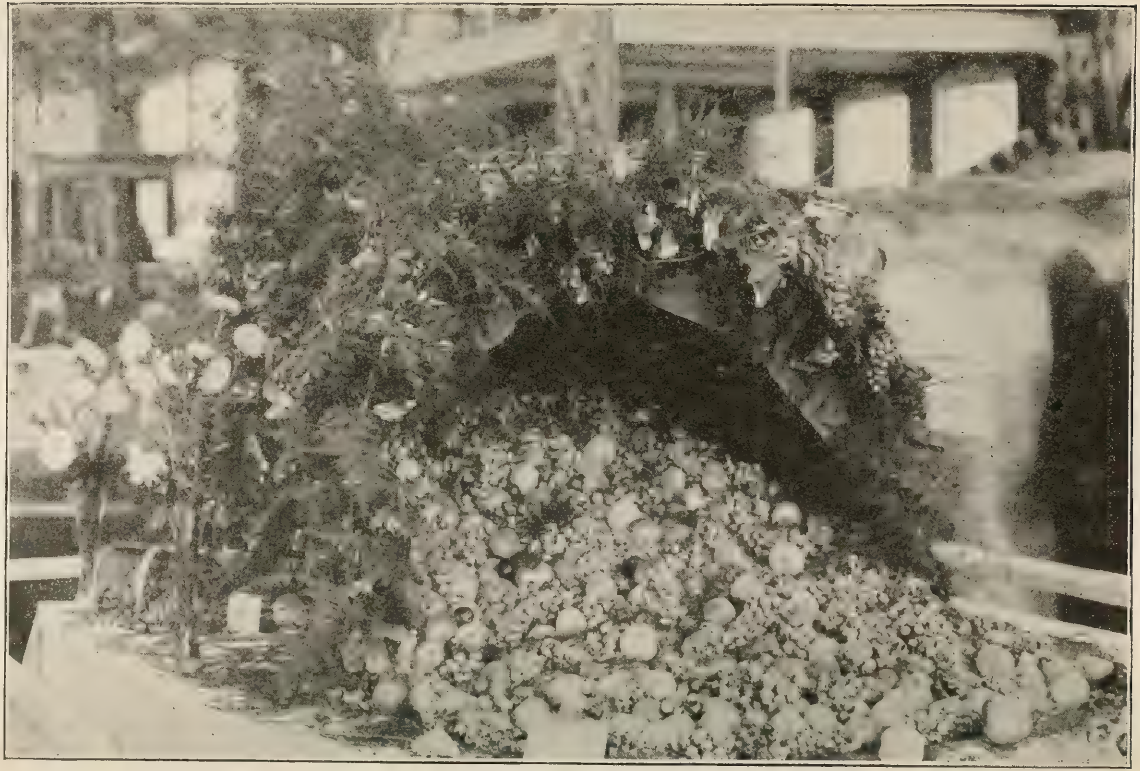
Counties shipping more than 1,000,000 pounds net, of butter in the year ending September 30, 1907.

1907.	Counties.	1906.
5,965,465	Woodbury	6,342,346
4,790,804	Polk	5,117,540
4,630,275	Jones	3,752,833
3,503,813	Lee	3,993,365
2,799,336	Delaware	2,740,122
2,773,412	Bremer	2,473,678
2,517,736	Fayette	2,766,049
2,418,368	Clayton	2,373,250
2,223,196	Dubuque	2,271,330
2,056,017	Chickasaw	2,468,370
1,888,055	Carroll	2,020,441
1,886,103	Buchanan	3,098,132
1,866,537	Winneshiek	1,957,822
1,845,878	Sioux	1,762,771
1,758,215	Kossuth	2,423,053
1,728,263	Hardin	1,784,853
1,722,565	Butler	2,233,228
1,673,441	Mitchell	1,582,822
1,607,382	Linn	1,734,959
1,592,207	Jackson	1,594,125
1,577,194	Scott	367,482
1,572,193	Allamakee	1,468,626
1,400,018	Calhoun	1,531,484
1,342,868	Winnebago	1,426,005
1,325,380	Worth	768,180
1,304,194	Taylor	1,289,519
1,285,826	Union	1,383,386
1,185,823	Cerro Gordo	884,721
1,147,832	Palo Alto	2,303,861
1,128,072	Buena Vista	1,321,824
1,124,306	Audubon	1,185,008
1,113,957	Wright	1,185,815
1,037,671	Story	850,053
1,019,196	Clinton	1,137,963
68,811,598	Total	71,595,016

These thirty-four counties ship 74 per cent of the 92,165,776 net pounds of butter shipped from the state.

Table showing total net butter shipments of the state for the years 1890 to 1907, inclusive, from Iowa to points outside the state; also increase or decrease as compared with the year preceding.

Year Ending October 1st.	Net pounds of butter shipped	Increase over preceding year	Decrease from preceding year
1890	71,255,796		
1891	68,690,716		2,565,080
1892	60,112,931		8,577,785
1893	54,572,902		5,540,029
1894	54,509,417		63,485
1895	66,497,108	11,987,691	
1896	80,032,916	13,535,808	
1897	83,620,081	3,587,165	
1898	75,364,337		6,255,744
1899	76,620,326	1,255,989	
1900	71,719,329		4,910,997
1901	74,863,995	3,144,666	
1902	72,714,584		2,149,411
1903	77,079,794	4,365,210	
1904	75,889,260		1,190,534
1905	91,051,551	15,162,291	
1906	98,184,607	7,133,056	
1907	92,174,776		6,009,831



An overflowing horn of plenty in the Horticultural Exhibit at the Iowa State Fair and Exposition, 1907.

PART IX

IOWA STATE FAIR AND EXPOSITION
1907

PRESS REPORTS AND LIVE STOCK AWARDS

Results in Boys' Judging and Girls' Cooking Contests

Awards in the Corn Show at the State Farmers' Institute Meeting December, 1907

PRESS REPORTS.

Wallaces' Farmer, Des Moines, Iowa.

In everything except attendance the Iowa State Fair last week exceeded all previous years, and but for unfavorable weather the attendance would have been in keeping with the magnitude of the exhibition. Monday opened with cloudy skies and a drizzling rain that discouraged those who had planned to come early. The rain was not severe, but the skies were threatening throughout the day, not only reducing Monday's attendance, but Tuesday's as well, for people do not like to start for the fair in the face of threatening weather. Tuesday was an ideal fair day and the attendance fell but little short of the corresponding day last year. Wednesday was a repetition of Monday on a somewhat larger scale. Enough visitors were in Des Moines to make a record attendance at the fair, but many thousands preferred to stay in the city, visiting the state buildings and other points of interest rather than visit the fair in the rain. There were, however, almost as many on the grounds as Wednesday a year ago. Wednesday night came the deluge. Shortly after midnight a heavy rain and wind storm began and continued long enough to blow down one or two insecurely fastened tents and wet things not properly protected. During this storm a live electric light wire was blown against the large tent covering the airship, setting it on fire and entirely destroying tent, airship and captive balloon. A drizzling rain continued into Thursday morning, still further reducing the attendance. The daily press of the city greatly exaggerated the damage done by the wind.

Notwithstanding the unfavorable weather conditions, however, the cash receipts for the week were more than sufficient to meet all expenses as nearly as can be estimated at the present writing. The total receipts were about $98,000, as compared with $101,000 last year and $78,000 two years ago. After all expenses are paid it is estimated that the surplus will be close to $20,000. Had the weather been favorable the attendance would have broken all records. Those who predicted a greatly reduced attendance because of the refusal of the railroads to grant reduced rates were false prophets. It is possible that more would have come had reduced rates been offered, not so much because of the saving in fare, but because of the more extensive advertising. The railroad advertising, which has been heavy heretofore, amounted to nothing this year.

It is safe to say that nothing but unfavorable weather conditions can seriously interfere with the Iowa State Fair in the future. Its place as a great State institution is now established and its greatness grows with each succeeding year. The fact of the matter is that the Iowa farmer who wants to keep in touch with the agriculture of the State cannot afford to miss the State fair, nor is he doing justice to his wife and his boys and girls if he permits them to miss it. Nowhere in the world can there be found a better opportunity to study improved live stock, farm machinery designed to save and improve upon hand labor, the development of new grains and grasses, or to meet the people who are making Iowa the greatest agricultural State in the union. A visit to the fair if the time is properly employed is worth many times its cost.

After once reaching the fair grounds one can be comfortable and spend his time profitably whatever the weather may be. The largest crowd can now find shelter in the many buildings scattered over the grounds. The new swine pavilion alone, erected this year, will shelter many thousands. The need for this new building has been pressing for several years. A few years since when the rain began on Monday and continued until Thursday afternoon the swine barns were flooded and the passageways were a part of the time under six inches of water. It is fortunate, however, that the building of the new barns and pavilion was delayed until this year. Had it been built a couple of years ago it is reasonably certain that insufficient allowance would have been made for the future and the building would have been inadequate. The present building is almost an ideal structure for the purpose. Some idea of its construction can be obtained from the photographs printed in this issue. It is roomy, perfectly ventilated and convenient and comfortable for both exhibitors and the public. The barns proper containing the pens are in the form of a great quadrangle open at one side, which is mostly filled by the judging pavilion. There is room to place another string of pens between the judging pavilion and the barns to the north. This structure is located on the ground purchased this year between the Rock Island station and the south entrance, and covers several acres.

A couple of weeks prior to the fair a correspondent suggested in Wallaces' Farmer that folks who tented during the fair should provide themselves with large placards bearing their names to be placed on their tents and thus enable friends to find them. Had this suggestion been followed it would have saved an immense amount of time and trouble. The number of people who camp on the grounds is increasing each year. This is really the satisfactory way to see the fair when a number of the family come. The annoyance of going back and forth from town is done away with, and by living on the grounds one can go over the exhibits in a leisurely way and at a time when he is not crowded and can thus get the greatest good from them. An effort was made this year to erect the tents in an orderly way on streets. This should be worked out another year. The tenting ground should be completely platted, streets laid out and numbered and named and a record kept of the occupants of each street. If this is done and the names of the occupants of each tent displayed in plain sight it would make the tent life on the grounds still more popular.

If there are any pessimists among Iowa farmers they do not come to the State Fair, or if they do come, do not make themselves known. Wallaces' Farmer's pavilion was thronged each day with farmers from all parts of the State, and we made it a point to ask each one with whom we talked concerning the crops in his locality. We found the reports gathered in this way confirm the judgment we have already expressed in the paper. It is not a bumper year, but the general expression was that there would be plenty and to spare, while the high prices prevailing for all sorts of farm products leaves the producer in a most comfortable condition financially. The Iowa farmer is feeling pretty well satisfied with his conditions.

Notwithstanding the unfavorable conditions early in the season, the fruit exhibit in the Agricultural building was particularly strong. In point of numbers the display of all classes of fruit was greater than in former years, but it was not up to the standard in quality, most specimens being off in color and undersized. A very interesting thing in the fruit department was a plate of seedling gooseberries exhibited by the horticultural department of the Iowa Agricultural College. This particular variety is known as the Craighead gooseberry, and was introduced from Utah, where they have been propagated, by Professor Beach. This variety promises to be of great value and Professor Beach will determine its hardiness in this State in the nursery plots at the Iowa experiment station. The Craighead came from a native Utah variety and promises to be very productive.

The dairy interests of the State were well represented, there being 116 tubs of butter scored by Professor McKay. The buttermakers scoring highest were L. C. Peterson, of Story City, with 97½ points; F. H. Fisher, Greene, Iowa, with 97¼ points; and P. N. Peterson, Rake, Iowa, with 97 points. In the ladies' buttermaking contest first place was given to Mrs. J. A. Peters, of Ankeny, Iowa, who has been the champion buttermaker of the State in the ladies' class for the past several years. Mrs. Peters' butter scored 95 points. There was the usual display of dairy machinery and utensils, with practical demonstrations during the day.

The corn entries were all of last year's crop and of splendid quality. The northern section was not as well represented as it was last year, but the central and southern sections were better both in numbers and quality. Mr. George Steen, of West Liberty, Iowa, was the owner of the grand champion single ear, with W. A. Hook second. Mr. Hook's ear was the champion ear in the southern section of the State. The grand champion ten ears of corn went to Mr. O. Osborne, of Maxwell, Iowa. In the ten-ear samples of yellow corn A. J. Door, Greene, Iowa, was given first place in the northern section; O. Osborne, Maxwell, Iowa, first place in the central section; and Shaw & Nims first place in the southern section. In the ten-ear samples of white corn George Henry, West Union, Iowa, secured first place in the northern section; Fred Hethershaw, Des Moines, first place in the central section; and T. B. White, Oskaloosa, Iowa, first place in the southern section. Mr. J. Sundberg, Whiting, Iowa, awarded the premiums in all the corn classes, assisted by Mr. D. G. Wilson of Panora, Iowa.

The chief attractions Monday forenoon were the boys' and girls' judging contests for the free scholarships at the Iowa Agricultural College at Ames. The boys' contest has been a regular feature of the fair for the last three years, but the contest for the girls was introduced only this year, due to the earnest efforts of Miss Mary F. Rausch, who has charge of the domestic science work in the Iowa agricultural extension work. The girls' contest promises to be a regular feature of the fair in the future and we predict a great many more entries next year than this. At the exposition building Miss Rausch also had four nice rooms fitted up in a very home-like fashion, showing what can be done with small means to make the home cheery and comfortable. Nine of Iowa's best girls competed in the cooking contest and they were eagerly watched by an interested crowd throughout the test. Many of the visiting ladies expressed themselves as getting more out of the lectures and demonstration work than anything else at the fair. These lectures on domestic science were given at the rest tent and were always well attended, the tent being filled to its full capacity at each lecture. During the week Mrs. L. D. Mathos of the Woman's club of Dubuque lectured on "Clothing for Young Children," and assisted Miss Rausch in showing the visitors through the cottage.

The boys in the stock and grain judging contest were put through a most severe test, lasting from nine o'clock in the forenoon until nearly four in the afternoon. This scholarship contest is open to any boy in Iowa under twenty-one years of age, who has not been enrolled in any of the regular courses at the college. There were more boys participating this year than ever before, and their work consisted in the placing of two samples of corn, and two classes each of cattle, horses and hogs by each contestant. The money prizes are given in the form of scholarships at Ames.

The exhibit of the Agricultural College was better this year than ever before. All the departments were represented, including the animal husbandry department, which exhibited the international grand champion steer Defender, giving him a tent to himself just south of the entrance to the stock pavilion, where he was constantly surrounded by a throng of curious spectators. Defender is coming along in very good shape and in December will again compete at the international for the coveted position at the head of the line. At present his ration consists of three pounds, four times daily, of equal parts of corn, bran and oil meal, with a little oats.

The soil map of the State, which created so much interest last year, was duplicated again this year and was studied and appreciated by a constant stream of visitors. The extension department of the college has been doing a great work the past two or three years and had a fine exhibit of their county experiment station work. The experimental plots at the various county stations were a very effective manner. These were worthy of very careful consideration. At these county stations different kinds of crops are experimented with to ascertain what are the best and most profitable kinds to raise, their yields, etc., alfalfa, clovers, and the small grains are tested, and a fund of knowledge is thus secured which is invaluable to the farmers over the State. This year a complete report of their work will be published in bulletin form and can be better appreciated by those who saw the exhibits at the fair.

IOWA'S GREATEST STOCK SHOW.

The above heading fittingly describes the stock show of the Iowa State Fair of 1907, and Iowa has set a pace that it will be hard for the other shows to keep up with. In all divisions this show was strong and in some divisions a record breaker, notably in the horse department and in the Short-horn rings. Also in the swine department, where the superintendent was forced to turn hundreds of hogs away a week before the fair opened, notwithstanding the mammoth new swine pavilion which has been erected to take care of the exhibit. It was an even show and one which the Iowa and neighboring farmers from other states appreciated to the utmost. The live stock pavilion was crowded to its capacity from early morning until late at night and it took the entire week to finish the judging. The cattle, horse and swine entries were the largest in the history of the association. If the Iowa show continues to grow as it has in the past several years it will require buildings of larger capacity and an extra show pavilion to take care of the show in the way it should be taken care of. A gratifying feature of the show, too, was the large number of Iowa exhibitors. Iowa cattle, hogs, horses and sheep all being strongly in evidence. For example, in the cattle department 66 per cent of the entire exhibit was made up of Iowa cattle. In the horse department 70 per cent; in the hog department 87 per cent; in the sheep department 43 per cent, and Iowa cattle, horses, hogs and sheep, too, are better than they have ever been before. While the 1907 Iowa State Fair set the mark high, yet we predict that the breeders will rise to the emergency and that future shows may even yet surpass the great show of 1907. We congratulate the fair management, the breeders and the people of Iowa on the magnificent displays made and the interest which it created among Iowa farmers. They were quick to take advantage of the opportunity for the study of the breeds which it afforded and a more intelligent lot of students or critics no fair or show has ever had. The Iowa State Fair is attended by the best farmers throughout the State and they are quick to appreciate the opportunity for study and comparison it affords.

A Prize Winning Short Horn Bull at the Iowa State Fair and Exposition, 1907.

THE SHORT-HORNS.

Fortunate indeed will be the show this year that eclipses the record of the Iowa State Fair. We say fortunate advisedly, as rarely has a greater show of Short-horns been seen in any show as was lined up before the judges at the Iowa State Fair in the initial contest of the year. Its strength, in both numbers and quality, was astonishing. The show made a record that far exceeded the most sanguine expectations of either the state fair officials or the Iowa Short-horn breeders and others interested in the progress of the breed. As has been the case for several years a most pleasing feature of the Short-horn show was the Iowa state cattle on exhibit. Iowa breeders have certainly picked up on showing, bringing their cattle out in better shape and also bringing better cattle than they ever have before. We congratulate them upon the splendid showing this year, as it added much to the interest of the show throughout the week. It is at it should be, as Iowa is the greatest Short-horn State in the union and it is but fitting that she should have a great show of her own great product in the cattle line. The entire Short-horn show came in for universal praise and was fully deserving of all the compliments received.

From the very start it was evident that it was to be a record-breaker, as the opening ring of aged bulls was the best not only that has ever been seen at the Iowa State Fair, but it is very questionable if as many good aged Short-horn bulls have been seen in any show ring of recent years as that which opened the Iowa show. Generally the aged bull class has one or two outstanding good bulls and then tails down pretty badly. This was not the case at the Iowa State Fair this year, however, as there were bulls entirely outside of the prize list who would have been prize winners in former years. The veteran breeder, C. B. Dustin, of Summerhill, Ill., made the awards, but before going through all the classes, so stupendous was the task, that he asked for permission and received it, to have a consulting judge. E. B. Mitchell, for years a Short-horn breeder, and the late manager of the famous Tebo Lawn herd, rendered assistance in most of the classes, after the first few rings shown, the placing being made jointly by Mr. Dustin and Mr. Mitchell. Competition as usual was strong and it will not be at all surprising if future shows will tell a somewhat different story, as there are few judges who could entirely agree as to the many excellent entries the Short-horn rings at the Iowa State Fair brought out this year. Most of the prize winners will meet again at Minnesota next week and the continuation of the state fair show will be watched with especial interest.

A comment upon a few of the classes will probably be of interest. With the exception of the aged bull class, which has already been commented upon, the bull calf class was the banner class of the show. There were thirty-two entries in this division and a splendid lot of calves they were, more good calves it seemed to us than are usually seen in a state fair ring, and it would have been but little trouble to pick out double the number of prize winners which were worthy. It is an encouraging feature to see the young classes so strong as it promises well for future shows. The aged bull class should not be passed without special mention. In this class the winner was Whitehall Marshall, the champion of last year now in the hands of the Elmendorf Farm of Lexington, Ky., who are bringing out a show herd of excellent character this season. Whitehall Marshall is showing in splendid form and will make the strongest kind of a fight against all comers. It was a tug of war for second place between the Bellows Good Choice, a Choice Goods bull of sterling quality, and the Harding entry, Whitehall King, half brother to Whitehall Marshall.

Whitehall Sultan's get again held sway in the two-year-old class when Avondale, a roan of much the same type as Whitehall Marshall, who promises to make a stronger bid for championship honors later in the season, landed first place. Iowa had the honor of furnishing the second prize winner in Burge's Hopeful Knight, an excellent type of bull which made a strong show, defeating the junior champion of the Iowa State Fair last year. Both the senior and junior yearling classes were good and another son of Whitehall Sultan again carried off first honors, with a Choice Goods calf Gondimar, second, and Charley Daw's Nonpareil Prince, a son of H. D. Parson's former show bull, Nonpareil King, third. In the junior class, the Flynn Farm company, who have entered the show yard arena this year brought forth a prime entry in Premier, by Choice Goods, and he easily headed the class. He is smooth, even, uniform, and altogether one of the best young bulls that has come to our notice for some time. So strong were his claims, he was easily winner in the junior championship award which afterward followed. The Flynn Farm also furnished the first prize junior bull calf.

The aged cow class was not particularly strong, nor for that matter has it been for several years. It is simply a good lot but nothing sensational. The Tomson entry, Cherry Lass, received the verdict. She is a red cow with lots of scale and received the verdict over Anoka Broadhooks, who graduates into the cow class this year from last year's two-year-old class, where she was winner. There were nineteen cows in all in this class.

The two-year-olds were a stronger lot than the aged cows. The three first prize winners being particularly close. The good junior heifer of last year, Missie of Brownsdale, has graduated into the two-year-old form in fine shape and received the verdict. She had mighty strong competition, however, in the Choice Goods heifer, Clara Bell, and her half sister, Browndale Rose, both of which are prime heifers. The latter is not as strongly fitted as her competitors but is a heifer with lots of outcome and she will make the fight interesting whenever they meet in future shows. It was Wisconsin against Kentucky in the yearling class, but the Wisconsin heifer received the verdict. In the junior yearling class, Missouri furnished the winner in Wornall's Rose O'Dea, a roan yearling heifer of sterling merit, and Messrs. Wornall also furnished the second prize winner in Maid Marion, a Choice Goods heifer of style and quality. In the senior calf class Whitehall Sultan scored honors again, the Tomson heifer, Poppy Girl, a very close second. The junior class went to Herr Bros. & Reynolds of Wisconsin, who also scored third honors.

In the championship, Whitehall Marshall was made senior champion and grand champion, the junior champion winner being Flynn's Premier. Missie of Browndale was made senior champion female and grand champion over the junior champion winner, Rose O'Dea. The complete list of awards which follows tells the story in part. To really appreciate the magnitude of the show, however, one would have to see it. It was so much better than words can describe it that it must have been to be fully appreciated.

THE ANGUS.

The "Doddies" have always presented a strong front at the Iowa State Fair and this year was no exception to the rule. Quality, as it has been in previous shows, was a conspicuous feature of the Angus rings. It was hardly as strong a show as the previous two years, which have been remarkable for the strength of the Angus exhibit, but one, nevertheless, of which those interested in Angus could well be proud. With the exception of one heard from Missouri, it was entirely an Iowa show, and Iowa breeders furnished all of the first prize winners and most of the other prize winners as well. The Iowa State Fair nearly always brings out the new contestants for show yard honors who make good. This is the case this year, as O. V. Battles, making his initial show this year, made a splendid record, succeeding in carrying off a number of firsts, among them first on heard and getting more firsts in classes, not counting the groups, than any other one exhibitor. It was a record of which any breeder making his initial show could well be proud.

In the bull classes there were not nearly as many entries as usual. For example, there were only two aged bulls, both good ones, however. Jim Delaney, Mr. Binnie's winner of last year, came out in much stronger form than usual this year and is altogether a show bull of pronounced merit and one who promises to make good throughout the season. The two-year-old bulls, six in number, were also a good lot in which Glenfoil Thickset 2d, last year's yearling winner, proved the winner. He has come into the two-year-old class in splendid form and proved so strong a contestant that he was made champion bull of the show. There were four junior yearlings, in which Mr. Battles again carried off the honors, with a Black Woodlawn calf. There were likewise four entries in the junior yearling class, H. J. Hess of Waterloo, Iowa, furnishing a winner in Delgarno. There were eleven entries in the senior calf class in which the McHenry entry, Autocrat, carried off the honors, with Silas Igo's Black King of Homedale the closest kind of second and Binnie's Royal Barbara took third. There were only four entries in the junior class, Binnie's Lord Elmere taking the honors with Rosenfeld & Siverly's Peter Pan second.

In the cow classes, Glenfoil Rose, showing in the strongest form since a two-year-old defeated last year's champion Eileen Lass and also last season's Iowa State Fair winner Snowflake of Kirkbridge 2d. The ring, seven in number, was quite a strong one and will prove interesting competition throughout the circuit. Glenfoil Queen 2d is the winner in the two-year-old class. In the senior yearling heifer class, Pride McHenry 53d, proved the best of the lot, while the junior winner brought out one of the best animals of the show in Binnie's Queen Lass of Alta 3d, a heifer which Mr. Binnie considers the best he has ever bred. She is right in her prime and Prof. Kennedy considered her claims so strong that she was made the grand champion female of the show, defeating Glenfoil Rose, who had friends for the honor, as well as the two-year-old. Of this heifer Prof. Kennedy said that she was the best heifer that he had seen anywhere this year; that he had visited the

English Royal and the Highland shows and there was not a heifer in either of these shows that would compare with this great yearling. Mr. Battles scored first in the heifer calf class on Brookside Quality Queen, another daughter of Black Woodlawn. In the junior class H. J. Hess again scored first honors on Blackbird Quietdale 6th. The herd awards proved decidedly close and interesting. Mr. Battles received the first on aged herd, with the Binnie herd a very close second and the McHenry herd third and Miller fourth. In the young herd the verdict went to McHenry, with Binnie second and Hess third. The calf herd went to Binnie with Miller second and Hammers third. Mr. Binnie also won on get of sire and produce of cow.

HEREFORDS.

The Hereford rings did not present as much competition as was seen in either the Short-horn or Angus classes. In both the male and female classes the big majority of the blue and red ribbons went outside the state, largely to Cargill & McMillan and to W. S. Van Natta & Son. Some of the Hereford rings showed little competition for first place, the work of the judge being in picking the remainders of the class. The Iowa exhibitors in the Hereford classes were Ben Broughton of Lake View; G. W. Way & Son New Sharon; and Dale & Wright Pleasanton. The champion bull Bonnie Brae, and the champion female Mignonette, both belonged to Cargill & McMillan, La Crosse, Wisconsin. Iowa is a fertile territory for the Hereford breeders to cultivate, and it is to be hoped that next year will bring out a stronger show both of breeders from a distance and at home, as there is no reason why Iowa, like her sister, Missouri, should not be one of the greatest Hereford states. A stronger show in comparison with the other breeds would undoubtedly do much for the breed in this territory. Prof. Boss of the Minnesota Agricultural college, made the awards.

GALLOWAYS.

The Galloway show which has been rather light at the Iowa State Fair for some two years past, shows some improvement. Exhibitors were G. W. Lindsey & Son, of Red Cloud, Neb.; F. E. Bales & Son, of Stockport, Iowa; A. G. Abney, North Loup, Neb.; and A. F. Craymer, of Morris, Ill. The classes ranged in entries from three to ten and the female rings were particularly good, the aged cow class being particularly strong.

POLLED DURHAMS.

Polled Durhams in this year's show were all exhibited from Iowa with the exception of the herd belonging to William Smiley, of Albany, Wis. Messrs. Shaver & Deuker, of Colo, Iowa, who have been strong contenders at previous Iowa State Fairs, brought out an excellent herd this year and secured both championships on bull and female, also first on aged herd, as well as other good premiums. John Wilson & Son, of Avoca, Iowa, also made a creditable showing, these two herds winning most of the prizes. The awards were made by E. T. Davis, the veteran

Aberdeen Angus breeder of Iowa City, whose work proved quite satisfactory, Mr. Davis being a good judge of cattle. There were some excellent Polled Durhams in the show and it was the kind of exhibit to do the breed good.

RED POLLS.

The dual-purpose animals were placed by Prof. James Wilson, of Brookings, South Dakota, the type selected inclining somewhat more to the beef than to the dairy type of animal. There were a goodly number of Red Polls in the cattle show and competition was close, it taking the judge nearly as long to place the rings of these animals as as it did in the Short-horn classes. It was Iowa against Nebraska and South Dakota, the exhibitors being Frank L. Clouss, Clare, Iowa; B. A. Samuelson, Kiron, Iowa; W. S. Hill, Alexandria, South Dakota; and Charles Graff, Bancroft, Nebraska.

Champion Holstein-Friesian cow, "Parthenea Hengerveld 46004", shown by W. B. Barney & Co., Hampton.

HOLSTEINS.

Each year of the state fair sees more and more interest attached to the judging of the dairy cow classes. Although the entries were not materially larger than heretofore, there were more people interested in the dairy cow classes than formerly. They have not commenced raising pure bred stuff yet, but the future fairs promise to see more dairy animals in the rings. The Holstein classes were good and bad. W. B. Barney & Co., Hampton, Iowa, secured the great majority of the premiums and practically all the first and second prizes. Their closest competitor was C. F. Stone, Peabody, Kansas. Mr. Stone secured the first premium in the yearling bull class on Karl Netherland De Kol, and first on Sissy Baker Netherland in the yearling heifer class (in milk). Barney's bull Jewel of Home Farm, was the champion bull in the show while the champion cow was Parthenea Hengerveld, also owned by the W. B. Barney Co.

JERSEYS.

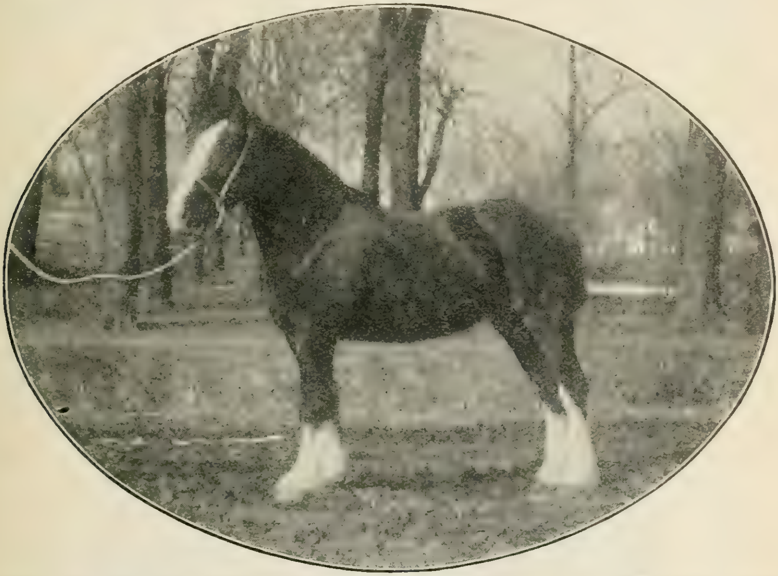
There was a small but good showing of Jerseys, and the majority of the prizes went outside of the state. The exhibitors were Dixon & Deaner, Brandon, Wis.; Hunter & Smith, Beatrice, Neb.; Mrs. S. B. Thomas, St. Joseph, Mo.; and the Hunkydory Farm, Pella, Iowa.

THE HORSE SHOW.

One of the most gratifying features of the Iowa State Fair this year was the splendid exhibit of heavy draft and harness horses. Professor Curtis took hold of this department of the show a year ago and in the two years that he has been in charge has brought it into the prominence it rightly deserves, as it is fitting that the Iowa Fair should represent by its show the position the state occupies in the production of good horses. The horse show this year may be classed as one of the best that has ever been made at any state fair. Indeed, it is questionable if any show, save the International at Chicago a year or two ago, has surpassed the show put up by the breeders participating at the Iowa State Fair this year. All classes were splendidly represented and stronger in numbers than they have been at any previous fair. The Percherons were out in the strongest force but all breeds made an excellent showing. As was the case last year it was impossible to show the horses and cattle at the same time. The live stock pavilion, therefore, was turned over to the horse department in the morning and to the cattle department in the afternoon. If both the horse exhibit and the cattle exhibit maintain their present pace, however, it will only be a question of time until two separate pavilions will have to be provided, as it was only by the hardest kind of work on the part of the judges that the awarding of premiums was completed during the week. The horse show is a very popular feature of the Iowa State Fair and we congratulate the management heartily on the splendid record made this year.

PERCHERONS.

The Percheron horse is a general favorite throughout the Corn Belt, and it was but natural that they should take the lead in the Iowa show. This has always been the case and it was again true this year. The various rings came in for much favorable comment and it was generally considered that the Percheron show was one of the best, if not the best, that the Iowa State Fair has yet made. It was strong both in numbers and quality and the Iowa horses were quite strong in the competition for awards, fully holding their own. The American bred horses proved their worth in competition with the imported stock. The veteran horseman, Alexander Galbraith, of Wisconsin, sized the aged stallion class about right when he said: "It was the hardest class to place correctly and yet be consistent, that I ever tried to judge." Other classes were scarcely less trouble, as the rings, some of them, were badly mixed, varying in type so that the judge had anything but an easy time. The stallion class in the three-year-old ring was the banner ring of the show. There were fifteen entries and they were a magnificent lot. Indeed it is questionable if even the International Live Stock Show ever produced a better class than this and it is seldom that a better lot of draft stallions is brought together. The ring came in for much favorable comment from those who have seen not only the best shows in America, but also the best shows in France as well. As will be noted by the list of awards which follows, Iowa breeders were much in evidence in the Percheron rings, Messrs. McMillan and Singmaster Bros. both making a very creditable showing indeed. Mr. McMillan again carried off the championship in the mare classes.



First prize two-year-old Clydesdale filly at the Iowa State Fair and Exposition, 1907. Shown by W. V. Hixson, Maringo, Iowa.

CLYDESDALES.

There was a better showing than usual of the Clydes. Practically all of the classes were well filled with the exception of the class for horse foals and stallions over three years old. The three-year-old stallions were an exceptionally strong class, showing lots of form with plenty of quality and not lacking in style. Iowa had the honor of furnishing the first prize winner, Mr. W. V. Hixson, of Marengo, Iowa, showing a very acceptable representative in Baron Clifton. The Clyde breeders are coming more and more to the long bodied type, as was witnessed in the show this year.

THE BELGIANS.

The exhibit in this division was highly creditable. There were good representatives of this heavy draft type in all the classes. In the aged stallion class there were ten animals in the ring, all good types of the Belgians and competition was close. Iowa breeders made a particularly good showing in the Belgian classes. The various strings came in for much favorable comment and deserved it.

ENGLISH SHIRES.

The Shire classes held up their end of the show in fine shape. The classes throughout were of splendid quality. In fact the showing was rather more uniform than in the other divisions and was one of which the exhibitors could well be proud.

MORGANS.

The Morgans, though not as large in point of numbers as were the other light horse classes, made a splendid showing at the Iowa State Fair. In the aged stallion class the blue ribbon was given to Gold Dust Abdallah, which satisfied the audience, the remark being made that "He's the very image of old Justin Morgan himself."

An American Carriage Horse in action.

SADDLERS AND DRIVERS.

The standard bred trotters were judged by W. A. Dobson. The class was as good as in former years, but did not attract the attention that the walk, trot and canter classes did, nor the high school horses. The high school horses furnished a fine show and were greatly appreciated by the crowds. The new class of American carriage horses were entered this year and showed some very commendable animals.

OTHER CLASSES.

The heavy and light harness classes were well filled and there was also a splendid showing of Shetland ponies, Geo. Heyl, of Illinois, and Cassidy & Thompson of Iowa being the principal exhibitors in this division. Harness horses were also in evidence, this department of the show showing improvement and attracting much attention.

S. F. Williams and H. L. Orcutt were the only exhibitors of mules, Williams winning on heavy mules and Orcutt on the light. McLay Bros. won first on single mare or gelding in the draft horse classes.

THE HOG SHOW.

The Iowa hog show seems to be bounded only by the limitations of space. Each year exhibitors are turned away for lack of pens. This year, with a mammoth new building built especially to accommodate the largest hog show in the world, the story is the same. Even before the building was near completed many were turned away because they could not be accommodated with pens. The new building contains 1,154 pens, 7x7 feet all under one roof. If the exhibitors brought mostly young pigs the capacity would be around 3,500 head, but this year there were more mature hogs on exhibition than usual, and considering that some who secured pens did not exhibit, the number in the pens was about the same as last year, which was in the neighborhood of 3,000. Of course much of this was sale stuff, and not all of it by any means of a character that should be admitted to valuable space at the state fair. Sales as far as learned were fairly good on the better class of stuff and a number of breeders paid fancy prices for stock of exceptional merit. The common stuff, especially that lacking size and bone to meet the farmer's requirements, was slow sale.

There were large exhibits, as usual, of Duroc-Jerseys and Poland-Chinas, and about the usual number of Chester Whites and Berkshires. In the bacon breeds there was a good showing of Tamworth, and also of the large Yorkshires, and a small exhibit of Hampshires. The character of the exhibits throughout was better than usual.

The hog show was doubly pleasing this year, both to the exhibitor and to the visitor, because of the splendid new building in which the hogs were quartered and the big judging pavilion in which the prizes were awarded. These are the newest, largest and undoubtedly the best buildings of the kind in existence. These improvements have been needed for some time and are very much appreciated by the swine breeders in particular. At the annual meeting of the Iowa Swine Breeders, held on the grounds during fair week, resolutions were passed expressing themselves as well pleased with the improvements and heartily thanking the state fair management, the State Board of Agriculture, and the legislature for providing such splendid improvements.

POLAND-CHINAS.

The Poland-China show this year was very much a repetition of what it is every year—a show in numbers and great in quality, with the prize winners of the early maturity, quality type, and, as usual, at Des Moines, quality predominating regardless of size and bone. In this respect the Poland winners differ from the prize winners of the other breeds, the Polands as a rule having more quality and less size and bone than the winners of other breeds. The Polands are noted for early maturity and quality, although many breeders are breeding the large, heavy boned type of Polands. Both types were represented at the fair this year, as usual, but the large type was not the winning type. Breeders of this type complain that size and bone are not duly considered at the Iowa State Fair, but that brings up the question of whether the judge should make his awards in accordance with the requirements of the trade, and particularly the farmer's trade, or whether he should award the prizes to the hogs with the most quality and finish and having the best show yard confirmation. Of course the latter qualities are more readily found in the small, early maturing type of hog. Mr. Wilson Rowe, superintendent of the hog department at Ames, made the awards this year. He started in by selecting for first place a hog of the smaller type, with much quality and finish and of unquestioned show yard conformation, and his judging all through was consistent, his type being practically the same all through, although most of the winners had more length than the hog he selected to head the first class he judged. Those who secure their herd headers of the type that won the prizes will lose nothing in quality or fancy points, but those who wish to breed for more size and bone will hardly select this type.

The Poland exhibit this year was not the largest that has been seen in Des Moines, which was due to the fact that a number of exhibitors were crowded out because the pens were all taken before they made application. For this reason, too, some old exhibitors were missed.

THE DUROC JERSEYS.

For the first time in the history of the Iowa State Fair the red hogs outnumbered the blacks. From the insignificant showing that this breed made a decade ago, when the Duroc Jersey exhibit was stuck off in one corner only to be poked fun at by the exhibitors of other breeds, the red hog show has steadily grown from year to year until now it is the big end of the biggest hog show on earth and the principal exhibit at nearly every hog show in the corn belt. While the increase in numbers has been very marked from year to year the improvement in the breed has also been very noticeable. A decade ago the specimens on exhibition were nearly all of the rough, coarse type, while the prize winners at the present time have so much more quality and finish that they almost look like another breed. Yet the type is still the lengthy, good boned type that made the breed popular. Of course there are exceptions, and enough of them to put the breeder on his guard to not sacrifice size and bone for quality. It must be said to the credit of the judge in this great showing of red hogs that, while he did not always give satisfaction, the type he almost invariably selected was the lengthy, good boned type. Duroc Jersey breeders are to be congratulated on the splendid showing of this popular breed at Des Moines last week, not only for the number of Durocs on exhibition but also for the good type of their show hogs in general, and especially for the large number of good, big smooth ones in the older classes. There were more good boars over twelve months old than were ever seen together before, and the classes were remarkable for the good ones clear down the line.

The pig classes brought out a number that were overfitted and down on their feet, which is always the case, and not all the overdone ones were in the pig classes, either. The sow classes were strong and the prizes were pretty well divided up.

CHESTER WHITES.

This breed made a very creditable showing, as usual, although in numbers the Chesters never make nearly so big a showing as the Durocs or Polands. However, the fair goer who is always looking for the biggest hog on the grounds can usually find him among the Chesters. This year one of the winners weighed 980 pounds, and was in rather thin condition. The Chester White sweepstakes boar of a year ago was on the same big order, and as long as the prize winners are of this big type there is no danger of the breed becoming extinct, and the farmer or breeder who selects his boar from this type will lose nothing in size, bone or prolificness. Not all the old exhibitors usually found at the Iowa State Fair were represented, but there were new exhibitors to take their places.

LARGE YORKSHIRES.

While the showing of this mammoth breed of bacon hogs was not large, it was good for an "all Iowa" exhibit, and indicates a growing interest in this popular bacon breed in Iowa.

TAMWORTHS.

Not since the St. Louis Exposition has there been such a showing of Tamworths, and the St. Louis show excelled the Des Moines show in numbers only and not in quality. The exhibit offered the Iowa farmer at the fair a good opportunity to study at close range some of the best specimens of this long-nosed, long-legged, and long-bodied bacon breed of hogs. While the Tamworth is a long, slim, hungry-looking fellow, he develops as much size and bone as any breed.

BERKSHIRES.

The Berkshire show was not what one would expect to find at a state fair that makes the biggest hog show in the world. There were no exhibitors from outside the State and only a half dozen exhibitors all told. The show, however, brought out some splendid specimens of the breed.

SHEEP SHOW.

The sheep pens were well filled and offered a good showing.

The Homestead, Des Moines, Iowa.

The corn-belt state fair circuit for 1907 was opened last week at Des Moines, Iowa, having been placed first on the circuit two years ago by the state fair association. Advanced predictions indicated that the fair would eclipse all former records, and in some respects this was the result. Never before did the fair at Des Moines open under more favorable auspices, and seldom has it closed, having to its credit more things accomplished. The attendance was cut somewhat and the pleasure of sight-seeing marred by an unusually severe mid-week storm. Even with this to work against, however, the total receipts of the fair approached within a very few thousand dollars of the record made in 1906. The actual income from all sources amounted to practically $100,000.

Although there is at the present time some magnificent equipment on the Iowa State Fair ground, the experience of last week revealed more than ever the need of still more. Canvas makes but a flimsy protection to high-priced manufactured goods, and it is marvelous how manufacturing concerns have continued to exhibit under such unfavorable conditions. There should be erected in the immediate future a so-called manufacturers' building, and the State can make no better investment than to appropriate money for this purpose, if possible, at the next session of the legislature. Iowa's sister State, Minnesota, is far in the lead in this regard in the provision that has been made for exhibiting manufactured goods on the state fair ground. It is like repeating an old tale to bring up again the matter of an amphitheatre, but this year, even with a somewhat lessened attendance compared with 1906, revealed the great need for a new structure of this character. It is here where the State has actually been parsimonious. The people are demanding amphitheater accommodations and they are able and willing to pay for it. The receipts from this source, if a suitable structure were erected, would do much toward making other needed improvements, but trailing along as we are now the people are disappointed every day of the fair on account of lack of accommodations in this regard, while at the same time there is lost to the State a handsome annual revenue. The need for the two improvements mentioned is so great as to make it appear entirely feasible that the legislature should meet both at the next session.

The improvements made from the earnings of the fair and from money appropriated by the State during the past year proved to be exceedingly well adapted to the end which they were intended to serve. The new swine pavilion, for which swine men have so persistently fought for years, seemed to perfectly meet the needs of exhibitors as well as visitors. It is light, roomy, well ventilated and convenient and, without question, it stands in a class by itself among pavilions of its kind. To say that applications were made for every pen in this mammoth structure four weeks in advance of the show gives some indication as to the size and importance of Iowa's swine industry. Another pavilion of its size could be filled and there were not a few who expressed themselves during the week as believing that the State eventually should make provision for all those who desire to enter. For the present we take it upon ourselves to express for the swine men of the corn belt the fullest and keenest appreciation for what the State has done during the last year for this department. We heard not a single criticism of the new building, so that the State for its liberality, as well as to the architect and to the builder, swine exhibitors are truly grateful. It is hoped that out of the receipts of the 1907 fair there will be found an amount sufficient to place seats in the swine judging pavilion. This will add immensely to the comfort of those who are interested in this department and it will make it more convenient for exhibitors. According to the present arrangement there is necessarily a little confusion in the judging ring on account of the presence of too many visitors. The opportunity for seeing from the sides is naturally so poor in the absence of raised seats as to make it difficult to keep exhibitors and interested parties from the ring. With the instalment of seats, however, a new rule should be put in force whereby only those who are actually showing hogs, as well as properly credentialed newspaper men, should be allowed in. Only in this way can the judging of the swine be made educational to the greatest possible extent.

The state fair grounds were never in better shape than they were this year and they were never better kept during the week. On account of the storm the entertainment features of the fair were interfered with considerably, but sightseers, as a body, were not knockers this year. The burning of the airship by coming in contact with a live wire, put an end to one of the much-advertised features of the fair, but no one is especially to blame, as the disaster was due entirely to the storm. The races also were interfered with and yet the race program was practically carried out, though scarcely in order as to the day indicated on the program. The entertaining features in general were up-to-date and wholesome and in this regard Iowa's example might well be followed by other states. The elimination of fakes and fakers has not detracted from the fair's revenue, but their absence has contributed immensely to the wholesomeness of the fair.

In county exhibits Iowa, from the standpoint of numbers, has never made the display that is usually made in sister states. This year the number of entries was less than usual, there being only one county exhibit from the northern section of the State. This was made by Mr. F. S. Ross, who brought a fine collection of farm and garden products. Mr. Ross has been a faithful exhibitor and it is singular that not another county in northern Iowa should take up this matter and compete for the liberal prizes that are offered in this class. In the central district there were but two county exhibits, one from Polk, prepared by Mr. Fred Hethershaw, who won first; and the other from Delaware, prepared and installed by the well-known exhibition man, L. G. Clute. These exhibits were tasteful in design, while the quality of the products shown were high-class in every detail. In the southern district Lucas county was entered by the Messrs. Plow; Cass by Mr. C. Malone; Warren by Mr. Shetterly. The latter two counties were tied for first money and the first named county placed second. The exhibits made were creditable in every way and few features of the fair attracted more favorable comment.

Agricultural hall this year held more than its usual quota of educational exhibits. The agronomy and soils department of the Iowa Agricultural College had installed exhibits that attracted much attention. In addition to making a show of the best corn that has been exhibited during the last few years, the result of various experiments was illustrated in a graphic manner. For instance, piles of corn showed the difference in the product from a single ear, this varying in some cases as much as 100 per cent. It indicated plainer than any words could convey that there is a marked difference in the yielding ability of two ears of corn that look nearly alike. Then there was the illustrated exhibit in which the yield was shown when corn is planted in different thicknesses. The yield in 1906 from one kernel per hill was forty-two bushels; one and one-half kernels fifty-two bushels; two kernels sixty-four bushels; two and one-half kernels sixty-nine bushels; three kernels seventy-three bushels; three and one-half kernels seventy-four bushels; four kernels seventy-five bushels; four and one-half kernels seventy-six bushels, and five kernels seventy-seven bushels. These results were the average made from ten county experiment stations in the year mentioned. Another feature in the Agricultural hall was the exhibit of Garton Bros., of Warrington, England. This notable firm of grain improvers made their appearance in America for the first time with samples of their grain which they have improved in such a marked degree during the last twenty-five years. They were making a specialty of oats, both the spring and winter varieties, and no department in the Agricultural hall attracted more attention than the samples of grain shown by this firm. The Garton Bros. are of the opinion that the corn belt needs regenerated grain; that is, grain that has been improved by crossing and selection. The work in England has resulted in increasing the yield as much as fifty per cent, and the possibility of attaining a similar result in the corn belt seems feasible.

The judging contest between young men under twenty-one years old in competition for scholarships offered by the agricultural society to the Iowa Agricultural College continue to be popular. This year thirty-three young men were on hand to judge the live stock and the corn. The winners of first and second premiums are given a $200 and $100 scholarship, respectively, third getting $25 and fourth a Scotch collie pup. A contest was also conducted for young women by the Iowa Agricultural College. There were nine contestants, each being called on to mix and bake a tin of biscuits and cook a porterhouse steak. This was followed by each giving written reasons for the various steps of the operation.

This contest terminated satisfactorily in every way and it is altogether likely that the department of agriculture will add a new building in the very near future so that it may be greatly enlarged. Illinois fair has made this a feature for many years and much good has been accomplished by way of disseminating sound principles relating to cooking, sanitation and the care of the sick.

It is hardly possible to give credit to all those who contributed to make the fair the great success that it proved to be. The city railway never handled the crowds better, and we believe that the citizens' committee of Des Moines made good their promise to care for those who made application for lodging and for board. Des Moines had room for all visitors and every precaution was taken to prevent strangers from being hoodwinked. Considering the large number to be cared for, we believe that the city is entitled to no small degree of credit for the record made. Officers of the fair have profited each year by the last year's experience, and the management this year not only in a general way, but in detail, was better than ever. Things were made convenient for exhibitors, there being less than the usual amount of red tape that is found at the average fair, while visitors were handled as if they were in the hands of their friends. Of course the management is greatly handicapped by lack of a proper amphitheater to care for the crowd, and we repeat that the State should overcome this difficulty by making a suitable appropriation for a new structure of this character.

CATTLE.

SHORT-HORNS.

The Short-horns make important history at the Iowa State Fair each year, as it is the first fair in the great corn belt circuit. The history made last week by this notable breed will always remain an important page in the annals of the red, white and roan. There were upwards of 300 animals of this breed entered and more than 275 actually on exhibition. This number exceeds any former record at the Iowa fair, being practically equal to the record of the 1906 International. Some idea of the merit of this class may be conveyed by stating that in 1906 Mr. F. A. Edwards, of Webster City, won third on the Cruickshank bull, Secret Viscount. This year the same bull was up again in fully as good form and stood in tenth position. This was largely due to the competition found in new material introduced this year.

HEREFORDS.

The white face contingent was not as much in evidence as has been seen on Iowa grounds. Some good Herefords were on exhibition, however, from Wisconsin, Indiana and Missouri, as well as a number of Iowa herds.

ABERDEEN ANGUS.

The Aberdeen Angus show was confined almost exclusively to Iowa. The old guard of Angus breeders from the Hawkeye state were nearly all out.

GALLOWAYS.

The shaggy-coated Galloways were more numerous this year than usual and made a better showing than they have at this fair for a number of years. The females among the Galloways were exceptionally good; in fact, the best ever seen on the fair grounds. Some of the bulls were good and rated well up with the females, but did not rank so uniformly good. It was the general comment by the breeders of the other beef breeds that the Galloways were certainly making a creditable showing.

POLLED DURHAMS.

There were five herds of Polled Durham cattle shown at the Iowa State Fair this year. Although the number in any one class was not large, yet competition was not lacking and the prize winners in most cases were animals of more than ordinary merit.

RED POLLS.

The exhibitors of Red Polls were Chas. Graff, Bancroft, Neb.; W. S. Hill, Alexandria, S. D.; Frank J. Clouss, Clare, Iowa, and B. A. Samuelson, Kalona, Iowa.

JERSEYS.

A splendid exhibit was made in the Jerseys this year and keen competition was the rule in every class. Hunter & Smith, of Beatrice, Neb., were there with their renowned herd and carried off some of the best premiums, winning sweepstakes on their yearling bull, Guenon's Champion Lad.

HOLSTEINS.

There were three herds of Holsteins shown, the following being the exhibitors: W. B. Barney & Co., Hampton, Iowa; C. F. Stone, Peabody, Kan., and A. Winter, Boyden, Iowa.

HORSES.

BELGIANS.

With the addition of Lefebure and Garner, the exhibitors of this popular breed were quite the same as in the Percherons. The bulk of the showing, however, was in the stallion classes, there being two extra good classes of these. Judge W. E. Pritchard, who also officiated in the Shire classes, had charge of the placing. Some very excellent individuals were shown here, and in spite of the smallness in numbers it was better in general quality than that of the 1906 fair. A total of forty-four head made up the entries which appeared in the ring, there being one or two empty classes. Lefebure, of Fairfax, had the largest exhibit and took away the most prizes. As a general thing the animals shown seemed to possess more quality than in previous years, although, as is often found in Belgian classes, there were some quite lacking in quality. The big, drafty fellows seemed to attract the eye of the visitors and with their great size, good feet and the ease with which they move over the ground, size considered, made them deserving all the attention given them. No wonder a great many farmers use them on their farm mares to give size to the progeny. Taken as a whole, considering numbers, quality and absence of "tail enders," this year's showing should be considered superior to that of 1906.

THE CLYDESDALES.

Among the Clydes, as last year, were numbered many very good, useful animals, which would undoubtedly have won in much stronger company. Some mighty weighty individuals were entered, as shown by the fact that some of these entries in the breeding classes were shown in draft classes, and carried off the lion's share of the ribbons. A Clyde of weight, with the style of the breed, when shown in heavy work harness, is as pretty a picture as lovers of heavy horses would care to see. W. V. Hixon, of Marengo, an Iowa breeder, had some very good entries. His horses competed quite favorably with the cream of the outside firms. Some old familiar horses of last year's fair circuit were here, but not always were they so fortunate as then. The judge, Robt. Ogilvie, of Chicago, fixed the rings according to his usual satisfactory custom.

PERCHERONS.

While not advertised as the attraction of this year's fair, as was the case last year, the showing of the French breed was in some ways superior to that of a year ago. In 1906 the stallion classes were larger and in most cases the competition was more keen, although the judge stated that the class of three-year-old stallions was the most difficult one he had ever passed on. This year's most prominent feature in Percheron division was the excellent showing made in the mare classes. Not only were they good from point of numbers, but they were of a higher class than at previous Iowa fairs. Not all the firms which showed last year came back, but their places were creditably filled by new ones. Messrs. Burgess & Son of Wenona, Ill., and Trumans' Pioneer Stud Farm, of Bushnell, Ill., both of whom have been well known exhibitors of Clydesdales and Shires, were here with excellent individuals of the Percheron breed. Another newcomer was the Singmaster firm, from Keota, Iowa. These firms brought over an excellent importation this season and made a good bid for honors in nearly every class. The Keota firm are not strictly newcomers, but have not shown in recent fairs. H. G. McMillan, Iowa's old, reliable breeder, from Rock Rapids, deserves special mention for his excellent string of home-bred animals, particularly his mares. Nebraska and Minnesota, in addition to Iowa and Illinois, were also well represented. Alex Galbraith, of Janesville, Wis., did the judging and was busily engaged throughout the entire three days. The Percherons were the only breed which lasted through the three days of the horse judging. Almost a hundred head made up the showing of this breed, lacking but two of the round hundred.

SHIRES.

The English horses did not come up to the other heavier breeds in point of number and several classes had only one entry, but quality never was higher. The aged stallion class was strong.

Glorious Red Cloud, a good representative of the American carriage class.

AMERICAN COACH HORSES.

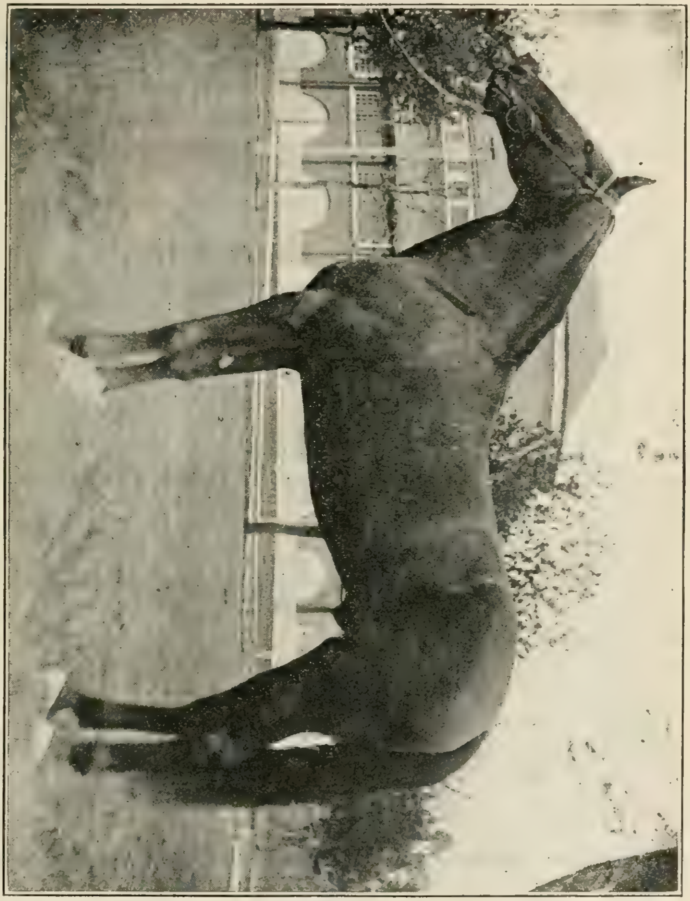
This is a new classification, given this year for the first time in any American horse show. Professor Curtiss, who is interested in the production of a new breed, distinctly American, of the coach horse, made this class for the purpose of arousing new interest in light horse production. W. A. Robson, than whom there are few better judges of coachers in this immediate section of America, passed on the division. He could, however, find no animal which was of the type desired for the classification, the result being that in most cases only second awards had to satisfy the best in each class. It is to be hoped that in the future more interest will be taken in these horses and, if other fairs were to add a like division to their list, a co-operation with the breeding experiment would be established, thereby helping greatly those most interested in the above mentioned experiment.

HACKNEYS.

While Iowa is strong in other classes than light horses, this fact did not mean that classy entries were not on hand in the Hackney classes this year. Although only seven divisions were made in this class, each ring brought out some good types. Queen of Diamonds, coming from Trumans' Pioneer Stud Farm, at Bushnell, Ill., was an exceptionally fine example of the best in the Hackney breed. She awoke the audience to the fact that "something was doing" when she was taken out to act.

STANDARD BRED TROTTERS.

A goodly number of standard bred trotters were entered for the contest, although but a few actually entered the ring. Part of the exhibits were judged in the pavilion, the others being taken out in front of the amphitheater. W. O. Dobson was judge. Horses of excellent quality were shown, all of good conformation and showing plenty of capacity for speed. In the aged stallion class it was indeed an aged one which won, Hail Cloud, the well-known old sire, it being placed first, at the age of sixteen years.



HAIL CLOUD 2:07¾.

Winner of first prize for Standard Bred Trotter, Stallion four years old or over, at Iowa State Fair and Exposition 1907, exhibited by James Watt, Des Moines.

MORGANS.

Only three classes of Morgans were shown, but there were some good ones among them. The judge, Mr. Bell, from the Bureau of Animal Industry at Washington, seemed, in the aged stallion class, to pick the more coachy type in preference to that generally accepted as the old Morgan type. Gretna Farm, of Wheaton, Ill., had some beautiful animals of great quality and finish, winning first and second both in aged stallion class. S. B. Mills, of Ames, Iowa, had some good ones in the mare classes. Perry Wood, of Marne, Iowa, had a very beautiful little black, quite a typical Morgan in form, which won third in aged stallion class.

HARNESS HORSES, AMERICAN OR FOREIGN BRED.

Matched heavy or coach team was won by Garner, of Des Moines, on a beautifully matched pair, with excellent appointment. Second went to R. Boude, Story City, Iowa, on a pair of chestnuts not so well matched nor so stylish actors. John Garrison came next with a pair of sorrels of good style and somewhat deficient in high quality as found in the winning pair. For single animal only one entry showed, that of J. F. Garrison, who was awarded a blue, and who then took Judge W. A. Dobson, of Marion, Iowa, out of the ring in his gig, and the horse fair at Des Moines was finished.

DRAFT GELDINGS OR MARES.

There was a small showing in this class, McLay Bros. and Finch Bros. having the only entries, McLay Bros. winning first on single animal over 1,750 pounds, and Finch Bros. taking first and second. In the class for animals under that weight McLay Bros. took first and second. A pair of McLay's mares took first in pair 3,400 pounds. No pairs shown under that weight nor were there any entries in four or six-horse teams. R. B. Ogilvie was judge.

GENTLEMEN'S DRIVERS, ROADSTERS.

Only two classes were entered in, but some excellent horses were shown. In driving team, pairs, to pole, Clara E. Monahan, of Des Moines, was first with a beautifully matched pair of blacks, with good type and swinging, rapid action. J. R. Peak drove the second pair, the chief character of which was their speed. Third was won by Shaw Bros., of Mitchellville, Iowa, with Miss Macklin and Baby Alice, while W. L. Moles, of Bayard, Iowa, finished up fourth with a pair of useful sorrels. Single driver to harness went to Peak on Vivian M., second to Thos. Bass on Petra M., third to Peak on Noretta and fourth to Black Bess, owned by Clara E. Monahan, of Des Moines. These entries were placed by W. A. Dobson, of Marion, Iowa.

THE SHETLANDS.

John Garrison, who judged ponies from Shetland, passed on more individuals than were numbered in some of the larger breeds. These diminutive fellows were quartered in the small hog pavilion, but attracted, it is safe to say, a maximum of interest from the children, and not a little from their elders. Every class in the ring was exceptionally well filled and a great deal of deliberation was necessary in some cases to make the awards correctly.

MULES.

Only six mules were shown, S. T. Williams and H. L. Orcutt making the entries. In class for mules four years or over, Williams won with a large gray. Mule two years old and under three, H. L. Orcutt took first.

Mine mule fifteen hands or over was won by H. L. Orcutt, he taking first and second. Best mule, any age, went to Orcutt. In pair of mules over 2,400 pounds, only a second was given, that being won by Williams, who also got only a second with a single entry in class for pair mules any age or weight. Pair under 2,400 pounds was won by Orcutt, who was allowed only a second by Judge W. J. Rutherford, of Winnepeg, Canada.

SWINE.

DUROC JERSEYS.

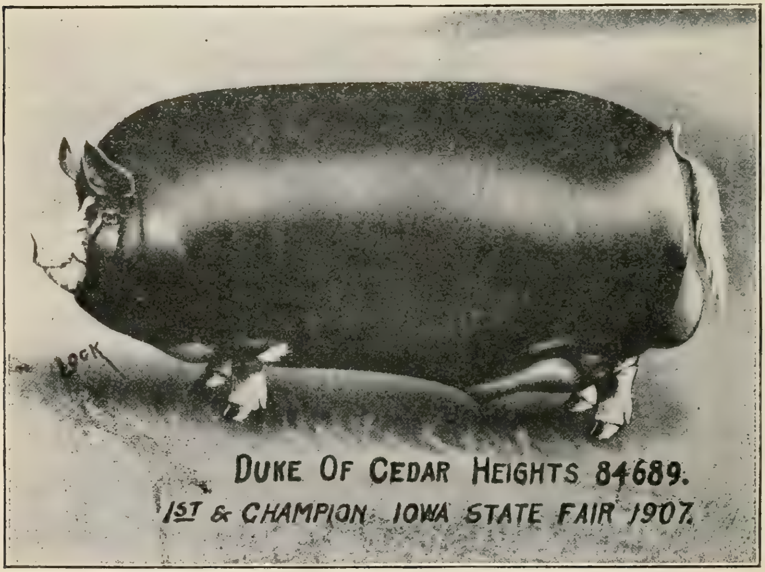
Probably the largest and best show of this breed that was ever witnessed was made last week on the Iowa State Fair grounds. With nearly 1,200 animals in the pens it assumed the proportions of what might have been expected of a corn-belt exposition of the breed. Something like 330 were brought out in the individual classes, to say nothing of the numbers in the group classes. Those who came to see the exhibit were much impressed with the headway being made by this breed and no doubt scores of converts returned home with the expectation of helping the breeder on to greater popularity. Breeders spared neither time nor expense to bring the best from the best herds in the land together. Ohio and Illinois sent herds of conservative types, while Nebraska came over with big ones and of splendid merit. Ribbons were pretty well scattered, and J. E. Drake, of Yellow Springs, Ohio, who placed them, worked hard to please all interested. He was very particular in passing by no defects and with a few exceptions, in both the boar and sow classes, awards met the approval of ringsiders until the selection of a champion boar. It was generally expected that this prize would fall to Iowa. However, this hope failed to materialize. Never before were classes so large and so uniformly good. With the one exception of the second boar class, the whole space of the new pavilion was frequently required. The proportion of males to females was about equal and in the under six months old class of boars seventy-six were shown, while sixty gilt came out in the females of this age. One of the features of the show was the strong backs, but good feet and pasterns were altogether too uncommon in view of the fact that the supporters of the breed claim this to be one of its strong points. Every person interested in the future popularity of the breed should use their influence to impress upon exhibitors the importance of showing only sure-footed animals. Much good judgment was shown by breeders in fitting and animals loaded with uncomfortable rolls of fat were few. This was gratifying.

POLAND CHINAS.

Wilson Rowe, of Ames, Iowa, who made the awards on this breed, found the show so good that he took a day and a half to judge it. His type of Poland is a hog of medium size, with abundance of quality. Specimens of the highest type were found at the top in the awards. The placing was generally conceded as consistent. Plenty of material was on hand and from the abundance it was not a little difficult to select the seven tops. Classes, barring the groups, averaged three times the number for which ribbons were provided. In the ten classes for single animals something like 250 animals came under the eye of the judge. Something like 950, all told, were on the ground. Few animals were overfitted this year and few were not fitted enough. Trim, neat-bodied forms were the rule in the classes under two years; and even in the aged classes this was generally true. The weather was cool most of the week and stock suffered little from heat. The pavilion arrangement was also conducive to comfort—a fact universally appreciated by breeders. The representation of herds was wide, coming from all parts of the corn belt and as far east as the Hoosier state, from whence came a splendid bunch of animals sired by L. & W.'s Perfection. They excited favorable comment for their size and quality.

CHESTER WHITES.

The Chester White show was strictly one of the home-breds. A careful estimate placed the number on the grounds at 460 head. It was probably a better exhibit than has been seen at any of the past fairs. Much interest was shown by visitors and stockmen and a great many prophesied a rapid gain in the popularity of the breed. There were good reasons to substantiate this belief, too. The quality of the show was good and met with general approval by those particularly interested either in herds at home or at the show. Practically every exhibitor sent out something for competition. Humbert & White, of Nashua, and New Hampton, Iowa, came with over a half hundred and got a proportionate share of the ribbons, as the awards indicate.


LOCK
DUKE OF CEDAR HEIGHTS 84689.
1ST & CHAMPION IOWA STATE FAIR 1907.

First prize and champion Berkshire boar, exhibited at Iowa State Fair and Exposition 1907, by H. U. Hainline, Orient, Iowa.

BERKSHIRES.

The Berkshire exhibit was a creditable one from all standpoints considering the position of the breed in the corn belt. While small in numbers, some animals of notable merit were found in many of the classes.

TAMWORTHS.

Approximately seventy head were on exhibition. Considerable interest was shown in the exhibit by visitors and many questions were asked. Tamworth breeders can, however, greatly increase the popularity of the breed by more publicity.

LARGE YORKSHIRES.

The largest number of Large Yorkshires were on exhibition this year that have ever been shown in Iowa, there being between ninety and 100 animals shown. The Yorkshire exhibit throughout was wonderfully uniform and no department of the hogs attracted more attention than this.

SHEEP.

The exhibit of sheep was one of the largest on the grounds and gave the public a very good idea of what breeders and importers are doing in the way of improvement. Without an exception worthy of note the animals shown were in creditable shape, which speaks well, especially for home breeders, who have not in the past met outside competition quite as successfully as this year.

Farmers' Tribune, Sioux City, Iowa.

The fifty-third Iowa State Fair, the greatest live stock exposition ever held in Iowa, yes, the greatest show of pure-bred live stock ever held in the world, came to a close on Friday, August 30. It was a proud day for the Hawkeye State; it was a proud day for Iowa farmers and breeders, as well as for breeders from other states, for all rejoiced in Iowa's continued progress and permanent prosperity. To say that the fair was "better than ever" or "bigger than ever" would not express the superiority of the 1907 show over those of former years. It was more than that; it was the greatest show of horses, cattle, hogs and sheep ever gathered together under one management. It was magnificent in proportions, superior in quality and educational in the fullest sense of the word. It told a living, breathing story of man's wonderful progress in making more useful and more valuable to him the beasts of burden and the milk and meat producing animals. It told a great story of intelligent, well-directed effort, successful effort, on the part of our great breeders in the animal as well as in the plant world. It excited the admiration of the old and inspired the young. It taught in a practical, forceful manner the power of mind over matter; that physical efforts properly directed by mental force, forethought, determination and action bring success. It called attention to the worth of friendly rivalry in competition and indeed taught a lesson to the thoughtful that might well be applied to the more serious questions confronting the American people of today. Rivalry for honors in the show yard was keen, competition severe, yet everyone was satisfied with the outcome. All had absolute confidence in the integrity of the judges and those in charge of the show. Merit counts in the American show ring, nothing else has standing.

While it is not to be assumed that every individual showman thought his animal or animals got full credit for their worth, their good qualities and beauty of form, while it is not asserted that some honors might not have been placed differently and perhaps pleased a few people better, every exhibitor felt that such difference of opinion as might exist in a few cases were not due to mistakes on the part of the judges, but rather to different points of view of individuals.

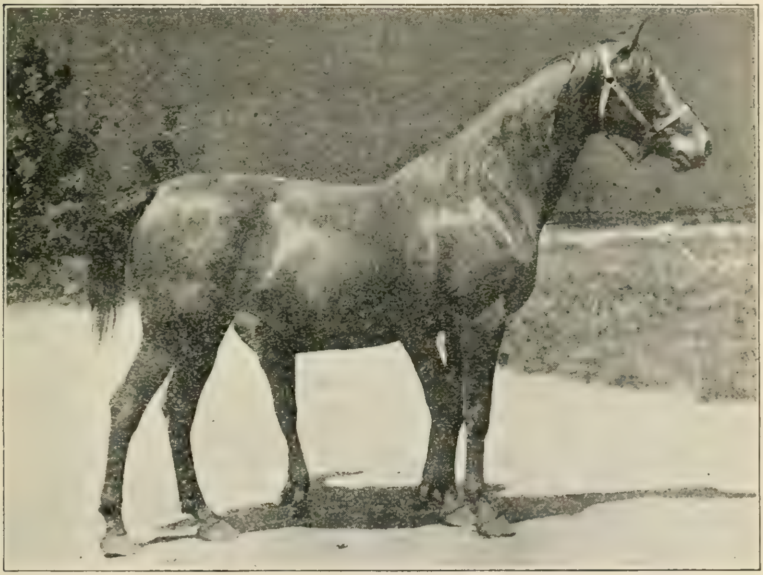
Exhibitors and breeders left the grounds feeling satisfied that honors won were justly won and that they had been earned. Farmers returned to their homes with clearer and better defined ideas concerning animal form and function, with a fuller comprehension of the benefit derived from the feeding and breeding of pure-bred live stock and many with a strong determination that the best, not necessarily the most expensive, is none too good for the farmer who tills the soil on the high-priced corn belt farms. Young men, farmers of the future, went back brim full of pulsing ambition to dream of new herds, new studs and flocks to be started at some future day. In short, the great fair spoke in no uncertain tones of the untold value to the State, and of the large returns the State annually derives from the few hundred thousand dollars invested in land and permanent improvements on the fair grounds.

Nowhere can the State invest money to better advantage than in the building up of educational institutions, and included among these institutions is the great State fair, which in some respects is really the greatest of all. The State fair is not a school for the young so much as it is for the adult, the man and woman of experience from the practical walks of life.

Iowa is recognized everywhere as the greatest agricultural State in the Union. It is but fitting that she should build up the greatest fair of any State but this cannot be done without a most liberal policy on the part of the legislature. There are still many things needed to enable the fair management to take care of the ever increasing number of exhibitors who desire to bring their stock to compete for honors at the State fair. It is almost impossible to comprehend the tremendous growth and development that has taken place in Iowa and the surronding states during recent years. It was thought, for example, that when the $80,000 hog pavilion, completed just before this year's fair, was being planned that it would be large enough to accommodate all the hogs that would be brought to the show for many years to come. Such was not the case, however. It is large enough to accommodate about 3,000 hogs. It held 3,200 this year but between 500 and 700 head were turned away because of lack of space. Had the pavilion been built twice its present size, large enough to accommodate 6,000 hogs, it would have been none too large. This has been the experience, not only of the Iowa State Fair, but at other state fairs as well for the past decade. Accommodations provided have always been too small.

One of the things that is needed by the Iowa State Fair, and very much needed, is a grand stand for the accommodation of the people. A first class grand stand would also be a money maker for the fair association, and in a few years would pay for itself. The present grand stand is only half large enough to accommodate the ever increasing crowds, besides it is old and unsafe. Thousands of people refuse to patronize it for fear it will break down.

New and up-to-date horse barns are also needed and should by all means be provided for the next year's exhibition. The present barns are old, out of date and not in keeping with the high class horses that must be housed in them. They are poorly ventilated, the roofs leak and in fact, they are inferior in the fullest sense of the word to say the least. The horse industry is one of the most profitable industries for the farmer of the corn belt and should be encouraged by the State as much as possible.



Kentuck Belle and foal, a typical brood mare of the American carriage type.

HORSES.

This year's horse show was the greatest that has ever been held on the Iowa State Fair grounds. It was the greatest horse show in fact that has ever been held in this or any other country. The high class mare exhibited this year far out-numbered those of the International exposition last winter. "This is the greatest show of draft horses that has ever been exhibited at any fair or exposition in the world," said Prof. C. F. Curtiss, superintendent of the horse department. Similar expressions were heard on every hand from leading American horse breeders as well as from importers. It is a notable fact that one of the greatest Percheron brood mares that has recently been imported and that won all the prizes at the leading shows in France was ontstripped by an American-bred mare that took first in her class and the championship prize. This again called attention to the fact that the day is passed when it is necessary for us to go to France or any other foreign country to secure the best horses. American-bred horses are today not only equal to imported horses, but they are actually superior, as this and other shows have demonstrated heretofore. In view of this it is time for American farmers to patronize breeders of American bred horses as well as American-bred cattle and to realize that we have as good, if not better, live stock in this country than can be found anywhere in the world.

CATTLE.

The cattle show was also immense. The Shorthorns were especially strong and it was considered on every hand that this breed made the largest and best show ever seen. The classes were large and the quality of the animals unsurpassed. The Hereford show was fully as large as last year and the quality of the cattle, taking the show as a whole, superior. The breed was complimented by producing the champion steer of the show, Fair Lad 1st. The Angus cattle were out in their best clothes; they were in fine show condition and excited the usual admiration of the spectators in the show pavilion. Perhaps the Angus show was not quite as large as it has been in former years but the quality was there.

SWINE.

The hog exhibition was magnificent. There was no less than 3,200 porcine beauties in the new pavilion, which is the finest structure of its kind in the world. Every breeder seemed entirely satisfied with the magnificent accommodations provided for their swine. The hogs did not suffer from the heat in spite of the fact that over 3,000 were gathered under one roof, and in spite of the fact that the weather was hot and sultry all through the fair. It was due to the unique manner in which the building is constructed that the pens remain cool and perfectly sanitary at all times. The only objection to the pavilion is that it is too small. It should have been built twice its present size. Provision must be made in the very near future, either for enlarging the building, or for the construction of another one of equal size. First class accommodation must be provided for the Iowa mortgage lifter. It is due to swine breeders that they should have the best accommodations for their stock. There is no class of men that do more for the up-building of the State than do the breeders of swine. Iowa produces more swine than any other two states in the Union. Hogs in Iowa have increased from January 1, 1897, to January 1, 1907, from 3,738,000 to 8,585,000.

Breeders' Gazette, Chicago, Illinois.

Nothing troubled the Iowa State Fair last week except a deficit of room and a surplus of water. It takes a lot of water to run a big fair ground, but it is wanted from the ground, not from the clouds. Iowa aforetime has demonstrated its ability to rise superior to the elements, and here was another proof. Preparation had been made for an exhibit of surpassing excellence in most departments, and all other conditions conjoined to write new records concerning this great display of live stock and machinery, but it seems impossible to turn off the faucets of the sky this season. They like water in the Hawkeye State. By statutory enactment they have recorded their preference for that fluid over others of more harmful character, but there nevertheless is a place for everything, and the place for rain is not on a fair ground. Writing at this early date, it is impossible to submit anything like a summary of the week's attendance, but the promise of the preliminary preparation days, when thousands of people flocked to the grounds, was much marred by the rains on Monday, Wednesday and Thursday. About midnight on Wednesday a windstorm and a deluge joined forces over the grounds and after a number of tents had been torn from their moorings the exhibits they contained were waterlogged. The airship and the captive balloon went up—in flames, kindled by contact of the gasbags with a live electric light wire. Between two and three inches of water fell. The country round about was in a panic the next morning over the swollen streams and the engines which pulled the excursion trains into the city consumed little coal in handling the few country people who ventured away from home. The surrounding section of the State was deluged. Gate receipts were materially reduced for the week, which is unfortunate indeed, as the fair needs every penny it can acquire through earnings and appropriations.

The Iowa State Fair resembles somewhat a lad in his last summer's pants. The work of rebuilding outgrown and antiquated quarters goes bravely on, however, and the realization of hopes and plans is clearly to be seen. Never was the money's worth better obtained than in the use of the stock judging pavilion this year. Those who had shown on its site a quarter of a century ago, on a railed-in grass plot, appreciate its comfort, its convenience and its protection not only to the stock, but to the thousands of men, women and children who sought its friendly portals when the pelting rain drove them to seek shelter. Its inadequacy in size was again demonstrated. The attractions of the arena were quite sufficient to keep the seats and promenades full the week long, saying nothing of the demands on the pavilion for shelter during showers. We were all of too small faith when the pavilion was built only a few years ago. Nothing remains but to follow the example of Illinois and knock out the end of the building and enlarge it fully one-third if not one-half.

That the horizon of the fair manager has materially broadened in recent years finds unimpeachable proof in the magnificent swine department which greets exhibitors at Des Moines. Iowa farmer's banks accounts are bottomed on corn and hogs. The swine show on this fair grounds has for years been unexcelled and seemingly unapproachable. Its housing might have been called a joke, if it were not a serious matter. Some years ago the swine department was rebuilt, and a nice little exhibition pavilion erected. When the first class came to be judged, it was found that a very small per cent of the entries could be accommodated in the pavilion! The new pavilion will hold them for a while. In the big square there is room to add another row of pens, but when that is done the board certainly will have met all reasonable demands on it for accommodations for this exhibit. It is not incumbent on any fair management to furnish costly quarters for sale stock. Enough has been done when show stock has been comfortably housed.

Our pictures preclude the necessity of description of the architecture or arrangement of the new swine department. Up to date it has cost around $77,000, and when the judging pavilion is seated and all finishing touches added about $20,000 more will have been expended. The Iowa State Fair does not anticipate its income from receipts or appropriations, hence when funds available for the swine department were exhausted, it left the plans uncompleted. Fair goers who respect themselves, their safety, their comfort and the decencies of travel sufficiently to pass by the congested trolly cars and use the capital Rock Island train service to the grounds, will remember a vacant strip between the train sheds and the entrance to the fair. That land has been added to the grounds, and on the east of the main entrance the new swine department has been placed. The buildings cover about three and one-half acres, with about one-half acre in a fine high and light show pavilion. The pavilion and pens are built of steel and vitrified brick, with gravel roofs. The pens count up 1,154 and around 3,200 hogs filled them, with something over 1,000 hog entries rejected on account of lack of room.

These new swine quarters are not only unique; they are grand. Light and ventilation have been sought, along with permanency of construction, and all these ends have been finely attained. Criticism may perhaps be directed at the placing of the show pavilion at one side of the quadrangle formed by the pens. It puts it rather far away from quite a number of the pens, and makes it a long drive, especially if the going happens to be muddy. The desire to obtain ample light and ventilation in the pens led to this placing of the big building. Another row of pens can be built north of it, and thus fill the square. when the approaches to the pavilion can be roofed over for wet weather. Certain it is that no fair ground boasts so large, so convenient, so costly an equipment for its swine department. In one season it goes far to dim the memory of the nightmare conditions which have attended this department for a quarter of a century.

Eight acres were added by the purchase of the new land, and directly across the main street to the west of the swine department, a new sheep department will be built on similar lines, although not so extensive a scale. Temporary sheds were needed up on the hillside this year to accommodate the overflow exhibit of sheep, and a new home will assuredly bring out yet more numerous entries.

A sample of the projected rebuilding of the horse department is furnished by the new barn, of steel and vitrified brick construction, that now stands not far from the swine department. It is 73x128 feet, and contains 88 stalls, five feet in width, and with oak posts and iron mangers and hay racks. The plans of the board contemplate spending about $100,000 in rebuilding the horse department, and the first new stable is gratifying assurance of the permanency, safety, comfort and convenience of the equipment.

Water and light, essentials to the satisfactory occupancy of a fair grounds, have received the attention of the board. The old pumping station and tank have been abandoned and connection made with the Des Moines water works system. Twenty-eight fire hydrants have been scattered about the grounds, and around $12,000 expended in bringing in the city water and giving fire pressure protection. An "all-hog" policy on the part of the electric light plant in Des Moines prevented connection with that system, and hence the first section of fair ground lighting plant was installed, at a cost of about $12,000. It is planned eventually to expend about $32,000 on this plant and in wiring buildings, so that each one may be outlined in globes of fire. The profit of this costly system of night decoration has been amply proved in hundreds of electric parks and pleasure resorts the country over, and the value of night performances as gate-receipt pullers has been clearly proved to the managers of this fair, so that they are preparing to make the grounds beautiful by night, in order that they may possess greater drawing power. Counting the $2,000 expended in repairs which are scarcely preceptible to the eye—so hidden, says Secretary Simpson, that he has to point them out to members of the board—the managers of the Iowa State Fair expended in permanent improvements last year approximately $115,000. They evidently got their money's worth. And this is just the beginning. A big, new steel grandstand will prove the greatest dividend payer of any improvement, so far as receipts are concerned, and it will be provided by next fair time. This will necessitate moving the race track, as it encroaches on space imperatively demanded by a rapidly expanding implement department. It is a particularly pleasing operation to watch Iowa State Fair grounds grow. Its managers are men who know how to cultivate its growth.

Even the most careless visitor must have been deeply impressed by the exhibit of machinery; 1,212 exhibitors covered 60 acres with their displays. This is an increase of more than 100 exhibitors over the 1906 number and many an applicant for space had to be turned away for lack of room. The removal of the race track farther to the north and west will relinquish ground available for the desired expansion of the machinery department. When President Cleveland informed Iowans years ago on the occasion of a visit to that State that it was an agricultural State, they were inclined to resent his lack of knowledge of their manufacturing industries, important at that time, but vastly more so now. Many of the towns and cities of the Hawkeye State boast manufacturing plants, and it has assumed a position of much importance in the trade. Especially is this true of implements designed for farm work. A canvass of the exhibitors at Des Moines reveals the fact that greater interest than ever was taken last week by the farmer visitor in the display of implements and farm machinery at the fair.

It is early in any year for an impressive display of corn at this fair, and only "roasting ears" would have been available this time. The display in the fine new horticultural and agricultural building was rather meagre, but the products of last year's fields were available for exhibition and for decorative purposes. Much of the fruit was nipped by the late frosts, but the long tables of attractive apples indicated that green apple pie has not entirely passed out of the bill of fare of the Iowa farmer. A significant feature that demands comment was the number of advertising displays of grains and grasses from various sections west and north, appealing to the Iowa farmer. He has no one but himself to blame for this "proselyting." He has spent so many millions of dollars the past ten years in western or northwestern lands, either for speculative purposes or future homes, that the land boomers of those regions have learned thoroughly his opulence and seem to have imbibed an idea that he is dissatisfied with his conditions. Canada, the Dakotas, Colorado and Nebraska were among the sections which sought to draw the Iowa farmer by their displays of products, while down under a tent, amid the sideshows, was a tempting display of farm products from the Texas Panhandle, erstwhile producer of horns and hides! Verily, westward the star of agriculture takes its way.

Live stock is the main theme of the Iowa State Fair. Around this exhibit the enterprise revolves. The interest in pedigree stock breeding sprang quickly to the front in this State early upon the introduction of improved blood to this country, and its herds, flocks and studs have been brought to a commanding position of importance. Added to this fact is the fondness which many prominent exhibitors in other states have for this fair. They like the country, they like the classification and prizes, they like the conduct of the fair, and inasmuch as it opens the circuit for the season, it is not strange that accommodations have for many years overflowed. At Des Moines the circuit divides, and part of the showmen take up their journey toward Hamline and part toward Lincoln, while a number of the home exhibitors either begin their rounds at the local fairs or retire with their taste of State fair experience.

The cattle exhibit was large and excellent on the whole. Short-horns readily took the lead in numbers, outranking in that respect any exhibition of the breed that this country has seen, but the average quality suffered somewhat from this very fact. Herefords were in comparatively small numbers but of admirable quality for the most part, and the Aberdeen-Angus sustained in the female classes the traditions of the breed on these grounds, albeit bulls were nothing to brag of as a lot. In the minor breeds some interesting exhibits were presented, and taken altogether the cattle section was quite satisfactory.

Draft horses made impressive display, especially in the female classes. Nothing is more gratifying than this indubitable evidence of expanding interest in draft horse breeding, to which feature must be added the pleasing fact that home-bred mares in several classes were good enough to be set ahead of imported females that had won distinction in French shows. Swine overflowed even the extensive new accommodations. The red hogs executed a flank movement on their rivals through early entries, and when the pens were filled nearly half of them took on that hue suggestive of a blistered harvest field face. Sheep required emergency accommodations, and made a very interesting presentation, although interest in this section of the show is decidedly less than in any other live stock department. Evidently the golden-hoofed animal does not enter closely into the economic calculations of the Iowa farmer.

THE CATTLE DEPARTMENT.

Some few changes in classification were made with a view of adding strength to this department. Breeders of Ayrshire and Dutch Belted cattle asked representation on the list and it was granted, provided three herds of each breed would make entries; but the required number did not fill, hence those breeds were missing from the show. The division of the yearling classes in the beef breeds into juniors and seniors was gratifying to exhibitors, and indeed in some breeds it was fairly demanded by the numerous entries. Governor Packard and his efficient assistants kept things moving promptly, and only in the Short-horn section, where entries were in disconcerting numbers, was there any drag in the programme. Keen interest was manifested throughout the week in the ring work, and those fortunate enough to get admitted to the arena sometimes so far forgot themselves in their desire to get as good a look as the judges, as to impede the work of those officials. Horses held the ring in the morning hours, and at 1 p. m. the herdsmen took up their march toward the arena at the heads of their carefully-groomed charges, and their session lasted well on toward six in the evening, watched to the last by large companies of spectators. Only the disreputable weather dimmed the glories of the 1907 show at Des Moines.

THE SHORT-HORNS.

Several of the leading exhibitors whose herds set the standard of our fall shows have acquired the Iowa fair habit, and presented the strength of the Short-horn exhibit at this time. In addition to this feature, which in itself give assurance of one of our most satisfactory show seasons for this breed, the offer of prize money limited to Iowa breeders brought out the overflowing classes which in one or two rings of single animals totaled over thirty entries, and which filled the arena when the group prizes came to be judged. For the most part the presence of these home entries did not add strength to the exhibit. Indeed, it brought out many an animal never intended by nature or by preparation for a place on any show ground, and which could not by any possible course of reasoning be thought to lend that impressiveness to such an exhibit which lends converts to the breed.

THE BULL CLASSES.

From the unusually uniform company or fifteen aged bulls (which evoked commendation that was finally crystallized into a megaphone announcement, credited to Senator T. J. Wornall and R. B. Ogilvie, that in excellence these bulls surpasses those of similar age seen at the English Royal show in June) Whitehall Marshall emerged the winner. Kentucky bluegrass evidently agrees with him, as he is again grand champion, although the runners up for this honor, the heads of the younger bull classes, numbered some surprisingly flash youngsters.. Dubious looks grew to dissenting headshakes as Good Choice was left above Whitehall King, and it would be no difficult matter to rank Scottish Champion ahead of Scotch Mist. Avondale did not need the help of the judge among the two-year-olds, as his position was assured both by his outstanding character and the mediocre character of the rest of the company. The senior yearlings required small attention after Anoka Sultan and Gondomar had been placed. The white bull has made much growth and is very attractive despite some palpable weaknesses. The tone changes when the junior yearlings are reached. No less than sixteen of them contained high promise for future show yard exhibitions. Premier in name the fleshily-marked roan from Flynn Farm was handily premier in this company of superior young bulls. There was a lot of contest up top in this class. When thirty-two senior bull calves assembled Mr. Dustin called for reinforcements, and Mr. Mitchell gave him the benefit of his counsel—which was not always taken—in the remaining classes. Quite a lot of Sultans and Marshalls will be found scattered through the prize list. Whether the winner here will make good his name of Marshall's Best must be left to the verdict of time, but he has a pretty good lap already to his credit in the race for that honor.

THE FEMALES IN THE RING.

A score of cows presented almost all conditions, from dairy shape to staleness. There was plenty of the latter, indeed bloom was quite wanting in most instances. A couple of very choice ones in type were the reds Cherry Lass and Lovely of Grassmere, a pair of sweet character and breeding type. Cherry Lass brought with her the pledge of greater usefulnes than show yard performance, as her heifer calf is among the tasty ones. But both of them have been too long at the game. They should have been ranked together, as the low-set thick roan Anoka Broadhooks is of a little different stamp and looked odd between them. She was in real bloom but some deficiencies of form scored against her. The big company of two-year-olds passed up the grand champion in Missie of Brondale 12th which seems to have restrained her too forward growth of last year and made her form in keeping with it. She certainly carries much show yard strength this year. Superior sweetness is found in Clara Belle, and form and substance enough to give her clear title to second place. Browndale Julia presented a very attractive front and Grace carries much substance in blocky form. Some good heifers were further down the line but this company did not hold much of show yard excellence outside the winners. Among the score of senior yearlings it looked for a time as if Elmendorf Farm did not need on this occasion the heifer Anoka Gloster 2d which it had endeavored to buy, as that farm's Sinnissippi Rose 2d stood at the top of the line an ominously long time, but finally the proper rating was accorded. Delightful has ample scale and very attractive eveness. The junior yearlings succeeded in going the seniors one better in numbers, and Senator Wornall was not content without the two leading positions in this comely company. Of the beautiful light roans Rose O'Day and Maid Marian the latter was rather generally preferred for pride of place, but the judicial talent decreed otherwise, and as it was all in the family there was little to say. Sweet Duchess of Gloster has plenty of depth but lacks width through the heart. No great violence would have been done the equities if she and Ramsden Flower had been further down on the list. Numerically and perhaps in quality the senior yearlings capped the climax No less than thirty-seven asked position, among them several "dumplings" just over the age limit that were seriously handicapped among the older ones. Mr. Harding declares Sultan's Athene is the best calf he ever exhibited, and an argument is scarcely possible on that proposition. She is about the acme of youthful feminine Shorthorn excellence. The home rating and the judicial allotment between Poppy Girl and Demure (the latter the calf shown at the heels of the first prize cow) do not agree, but it is all in the Tomson family, and these beautiful calves were separated on the list only by the precocious little Lady Rosita, which is just within the limits in age, and one the eye lingers on in delight. The juniors were an admirable company, and it was nip and tuck between Rosetta of Grassland and Princess Royal with plenty of argument in favor of the former named "dumpling," which is strongly reminiscent of the famous Dewdrop; but the taller calf finally headed the list.

THE HEREFORDS.

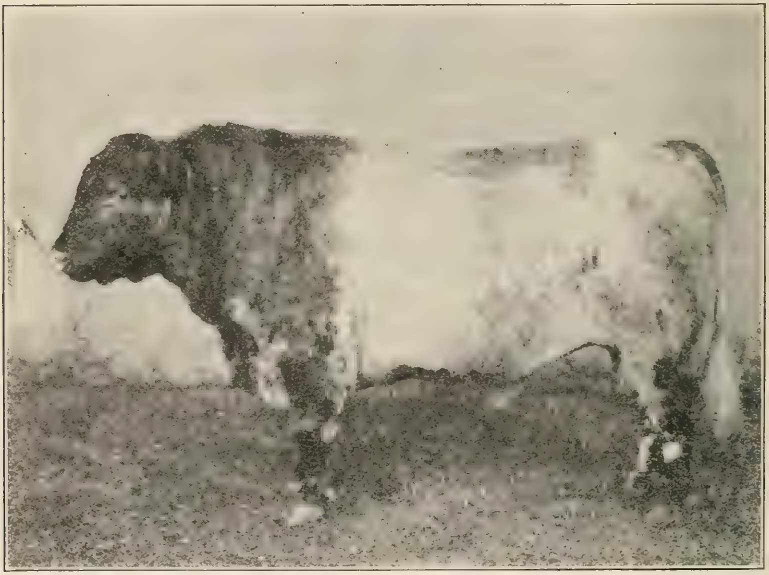
A comparatively small but altogether excellent exhibit of the "white-faces" came from the herds of the following named exhibitors: Cargill & Price, Lacrosse, Wis.; W. S. Van Natta & Son, Fowler, Ind., G. W. Way & Son, New Sharon, Iowa; James E. Logan, Kansas City, Mo.; Dale & Wright, of Iowa; J. J. Early of Missouri; Ben Broughton and Dorr & Redhead of Iowa. The awards were placed by Prof. Andrew Boss, of the Minnesota Agricultural College, St. Anthony's Park.

THE ABERDEEN-ANGUS.

It could not be claimed that the male section of this breed was up to its standard at this fair, although it developed a clinking good two-year-old as the grand champion, and numbered among the youngsters some promising material. In the female classes, after the aged cows were passed, the tone took on its accustomed quality, and some decidedly attractive presentations of "doddie" flesh and bloom were in evidence. Prof. W. J. Kennedy, of Ames, rated the contestants. Jim Delaney, the aged bull, is in capital form this year with a lot of flesh smoothly carried, but still wanting the balance of heft in the hind parts. The two-year-old Glenfoil Thickset 2d lacks little of satisfying a high ideal in Angus bulls.

He is the right stamp and meets inspection in most parts besides carrying very attractive bloom. Two of the senior yearling bulls were deservedly sent to the barn as so far below show yard standard as to remove them from title to recognition.

Glenfoil Rose has been very active in acquiring ribbons and continues to accumulate them, although it cannot be said that she carries quite the bloom that a high class show cow of the breed should present. She holds her form quite well and is a beautifully-fronted broad-bosomed, wide-ribbed matron. She is somewhat fresher than her companions however, all of which have been asked to do the trick too often. It was some better among the two-year-olds, and the senior yearlings contained quite a sprinkling of beauties. Pride McHenry 53d and Gaylawn Bonnie are splendid representatives of the breed. Among the junior heifers the judge found his grand champion female—Queen Lass of Alta 3d—a rare combination of Angus excellencies, and he did not hesitate to assign her the crowning honors against older ones forward in the contest. A lot of real "black diamonds" had a setting in the ring for senior heifers.


Champion polled durham bull, "Roan Hero 6313," shown at the Iowa State Fair and Exposition 1907, by Shaver & Deuker.

THE POLLED DURHAMS.

Since the establishment of a classification for Polled Durhams at the Iowa State Fair two years ago this hornless type of Short-horn has been making friends in Iowa. Especially favorable was the impression made by the exhibit this year. Numbers considered, no breed was more creditably represented. The usual ringside comment that Polled Durhams are improving rapidly was distinctly emphatic on this occasion. Perhaps the chief flaw in the exhibit as a whole was the tendency toward unevenness of flesh covering in the older animals. Several entries, however, were not to be faulted in this direction. Altogether the display marked another upward step in the stride of Polled Durhams toward meeting the demand for which the type was evolved.

In the aged bulls Roan Hero was the outstanding entry. He was presented in pleasing form, and is one of the smoothest bulls of his age. Big in girth, short-legged and strongly backed he is a show bull from head to tail. Young Fairbanks is a rugged big-framed sort, nicely fitted and even in his lines. His white hind feet give his red body color a dashy showy effect. A bull with an outcome is Iowa Chief, and Orange Boy is a big one for his age. Both added much strength to the yearling class.

THE RED POLLS.

Breeders representing three states made a creditable exhibit of Red Polled cattle. It was fully up to the high standard which they have set at this fair from year to year. Especially noteworthy is the uniformly good condition in which the animals were presented. Rarely have we seen a better fitted collection of Red Polls.

Prof. James W. Wilson, director of the South Dakota Experiment Station, Brookings, made the awards, following closely and with well balanced judgment the new standard and scale of points recently published by the Red Polled Cattle Club.

As heretofore the females made a better impression than the bulls, the younger stock of the former sex showing strongly. One Price is by odds the largest Red Polled bull that has been seen in years. He combines a comely massiveness with remarkable smoothness and impressive bull character. A bull with a bolder crest and strength of head and front is not often uncovered. The new standard calls for bulls weighing from 1,800 to 2,200 pounds. If One Price were fitted up to near his limit he would exceed the maximum by several hundred pounds. He is distinctly on the beef side, although his dairy indications commend him as a double-decker sort. In the two-year-olds Nelson illustrated quite satisfactorily the beef-and-milk type. Of the half dozen yearlings Ivanhoe gained premier place by virtue of his superior milk indications. Nine bull calves presented a variety of types and sizes. Burke, smooth as an egg and capitally finished for the show ring, is a prospect to watch. Lyman, a half-brother, is built along the same approved lines.

Eight aged cows were a pleasing class, with Daisy Princess as their leader in honors. At least three standard dual-purpose cows distinguished this collection, and they were recognized by the judge. Ruperta and Ruberta are ample in size with excellent udders and veins. Moppet is equally strong in this respect. Inez headed the two-year-olds. This is at once the Red Polled sensation of the year. The beef-and-milk idea in one hide has rarely had a more striking illustration. Ten yearlings averaged high in their conformity to the standard, a couple of South Dakota entries having some advantage in condition. Rosalind is not so showy as Queen, but the judge found more to commend her when he looked for dairy possibilities.

THE GALLOWAYS.

Improvement in condition was noted in the exhibit of Galloways. Numerically, the show was probably not so strong as it has been on several occasions at Des Moines. Some breeders, however, persist in showing animals that are ill prepared to make friends for the breed. Most of the classes included several substandard sorts that needed a deal more fitting. The tops of the rings were uniformly satisfactory. Especially strong were the aged cows, four distinguished showyard winners competing. Females made a better impression than the bulls. Scottish Samson was the bull show in himself. He is particularly big and bold in front, with unusual girth, and is finished smoothly to the tailhead. A little bareness over his shoulders represents a breed defect which Galloway men are eliminating. He is low enough and of striking masculine presence. The yearling bulls were a mixed lot of various types and lacking in condition. Four fairly good senior bull calves were shown. Lady Charlotte is not so large a cow as some of her companions in the aged class, but she is a beautifully finished matron back to the hooks. All of these show ring winners have been seen in better form than they presented here. Evaline 2d of Avondale did not keep her top line as even as it has been. Favorite 16th of Lochenkit excelled in depth of flesh. The senior heifer calves were a star feature, with Vala and Vada palpably at the front. Of this comely pair the second would best suit breeders who are seeking to improve the breed strictly along beef lines.

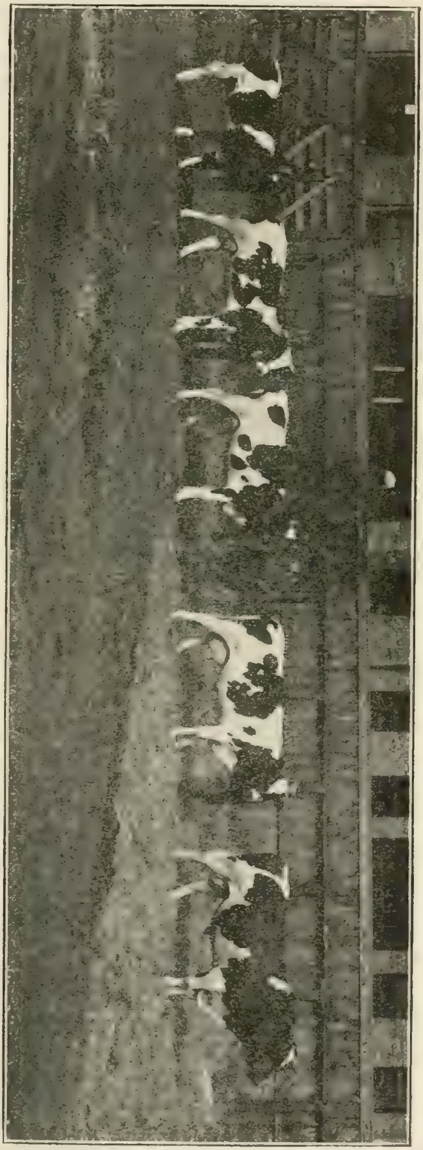
GALLOWAY STEERS.

A few Galloway steers were shown by C. D. McPherson of Iowa and G. W. Lindsey of Nebraska. Mr. Thompson, who judged the breeding classes of Galloways, declined to award prizes on several of the entries. Only two animals received prizes. Buster Brown, owned by Mr. McPherson, was given first in the two-year-old class and Red Cloud Chief, owned by Mr. Lindsey, first in the yearling class. The latter also was made champion of the breed.

GRADE AND CROSS-BRED STEERS.

Some capital material for the International was uncovered in the show of grade and cross-bred steers. Some of them will stand a lot of fitting for that show, but others are already in good form. Grade and cross-bred Short-horns made a conspicuously strong showing in this section. E. T. Davis, Iowa City, Ia.; Prof. W. J. Rutherford, Winnipeg, Ont., and C. B. Dustin, Summer Hill, Ill., were the judges. In the two-year-olds J. R. Peak & Son of Illinois were first on Joker, a grade Short-horn; Silas Igo, Palmyra, Ia., second on a grade Angus, and C. A. Saunders, Manilla, Ia., third on a grade Short-horn. In yearlings Peak was first on Robin, grade Short-horn, Cargill & Price, Lacrosse, Wis., second on Bonnie, grade Hereford, and Saunders third on Ike, grade Short-horn. In calves My Choice, grade Angus shown by Col. Igo, was first Metz Jo, grade Angus shown by W. J. Miller, Newton, Iowa, second, and Peak's grade Short-horn, My Surprise, third. My Choice was the champion grade or cross-bred steer. In groups Peak was first, Igo second and Saunders third.

The grand champion steer of the show was Fair Lad 1st, pure-bred Hereford, shown by Cargill & Price, and the grand champion group was shown by the same firm, the entries being pure-bred Herefords.



First prize "Exhibitors Herd" of Holstein-Friesian cattle at Iowa State Fair and Exposition 1907, exhibited by W. B. Barney & Co., Hampton, Iowa.

THE HOLSTEIN-FRIESIANS.

W. B. Barney & Co., Hampton, Ia., and C. F. Stone of Kansas for several years have been trying conclusions at Des Moines with their Holstein-Friesians. They were on hand again this year and some spice was added to the contests by the entries of August Winter of Iowa. Last year the Kansas cattle carried away the bulk of the top prizes; it was different last week, the Barney entries having the best of the showing. And the judge in both cases was F. H. Scribner, Rosendale, Wis., who always does his work with painstaking care. There was considerable difference in the condition of the two herds, the Kansas entries losing in several instances on account of inadequate preparation. Jewel of Home Farm, now eleven years old and champion in many stout shows, was sent out to add new honors to his list. The old bull still looks fine in the arena, and the judge could not find a better bull in the exhibit. The bulls did not average up with the females. Parthenea Hengerveld led aged cows and gained the championship with equal freedom. Considering her age—eleven years—she is a surprise. Her veins, udder and great capacity meet critical requirements. She is a rare old cow. Sissy Baker Netherland carries a standard Holstein-Friesian udder with well placed teats of good size, and they do not breed them to score higher in what breeders call quality.

THE JERSEYS.

One of the best small exhibits of Jerseys that have been made in years represented the old-established herds of Mrs. S. B. Thomas of Missouri, Dixon & Deaner of Wisconsin, Hunkydory Farm, Pella, Iowa, and Hunter & Smith of Nebraska. A sprinkling of imported entries served as an educational contrast with the more rugged home-bred animals. Almost without exception the cattle were beautifully finished. It was a quality lot of very impressive individuality. Mr. Scribner tied the ribbons. Emanon retains his bloom and shows as formidably as ever. Cotillion's Bachelor is a good pattern of nice finish. The top of the bulls was Guenon's Champion Lad, one of the outstanding representatives of the breed. He is a cracking good yearling of style, quality and balance. "He handles as good as he looks" was the judge's laconic estimate.

The nine aged cows were a study in Jersey type. Imp. Sultan's Wonder has long been a winner in the strongest shows. She is a grand old cow of the Island stamp throughout, but the judge prefers more constitution and capacity. He therefore placed Morey's Golden Lass at the head of this attractive company of matrons. She is naturally less refined than her foreign adversary, but she is in no sense coarse. Her udder conforms right up to the standard, being exceptionally well balanced, and the teats are of ample size and perfectly placed. One of the most satisfactory types seen in the show was presented in Silver Coo, carrying a remarkably well developed udder.

THE SWINE SHOW.

A big exhibit of hogs was expected. The new pavillion invited a veritable avalanche of porkers, and they came from all sections of Iowa and from several other states as well, more than 200 herds being represented. Some less than 1,000 entries were rejected on account of want of pens, leaving about 3,200 hogs to make the show. Applicants for pens were served in the order of their requests, first come being first served. Duroc-Jersey breeders took advantage of this situation and were fortunate in securing a lion's share of the space in the new pavilion. By actual count the breeds numbered as follows: Duroc-Jerseys, 1,125; Poland-Chinas, 969; Chester Whites, 471; Berkshires, 130; Large Yorkshires, 97; Tamworths, 53.

Poland-Chinas were not so strong as a year ago at Des Moines. They were not so well fitted. Indeed, the exhibit contained a considerable sprinkling of hogs that had no business in the ring. The prize-winners, however, averaged high, probably as good as the breed affords. The aged boars made an excellent impression. Seldom has a more uniformly high-class lot of matured boars of this breed been seen. Wilson Rowe, Ames, Ia., distributed the ribbons.

Each class was little short of sensational in Duroc-Jerseys. Never has this breed made such a stout display of its merits. Never have its breeders taken such pains to fit their hogs for the showyard. From the aged boars, of which there were twenty-one good ones shown, down to the pigs, the classes fairly teemed with well fitted hogs. There was not a weak spot in the display. J. E. Drake, Yellow Springs, O., essayed the big task of allotting the prizes. His work was done with much credit.

Berkshires made a small showing, and the percentage of good ones fell below that of the other kind. The chief strength of the show was in the younger classes. N. H. Gentry, Sedalia, Mo., awarded the prizes. He also judged the Chester Whites, which made perhaps the best exhibit in the history of the breed. Certainly there never has been a better fitted lot of Chester Whites than those which breeders presented on this occasion.

Large Yorkshires and Tamworths were well represented, the entries coming almost entirely from Iowa. In the former breed Prof. James Atkinson and B. F. Davidson, both of Iowa, won most of the prizes, the latter securing most of the top honors. Frank Thornber of Illinois had the best of it in Tamworths, though the prizes were well distributed among other exhibitors, including C. C. Roup, J. W. Justice, E. O. Thomas and Nye Patterson, all of Iowa. Prof. J. J. Ferguson, with Swift & Co., Chicago, judged these two bacon breeds.

THE SHOW OF SHEEP.

About 40 per cent larger than a year ago is the best word from the sheep pens at the Iowa State Fair this year. All the breeds for which classifications have been provided were represented, though in several of them competition was lacking. So substantial has been the gain in the number of entries of sheep that the management of the fair already is planning larger and better accommodations for this class of stock. Present quarters are not only inadequate, but unsuited to the purpose in case of rain and storm, as last week. A delay of more than a day in the judging of Cotswolds was occasioned by the rain leaking and blowing through the pens and wetting their fleeces. There was a healthy, enthusiastic tone to the trading consummated by flockmasters during the fair.

A Prize Winner at the Iowa State Fair and Exposition 1907.

SHROPSHIRES.

It was probably the stoutest show of Shropshires that has been seen in years at a State fair. Imported and home-bred sheep in the finest bloom which fitters can give competed, making every class highly interesting and instructive to spectators. Prof. J. A. McLean of the Iowa State College, Ames, was the judge.

THE HORSE DEPARTMENT.

Much of the interest in the live stock section inhered in the draft horse exhibit. It occupied the morning hours and the pavilion was always full of interested spectators, while as many as could crowd along the arena rail held tenaciously onto their positions. In this department, under the direction of Prof. C. F. Curtiss of Ames, a class for American carriage horses has been added and four more classes have been given to saddle horses. The ponies have received additional recognition, and in all the more important classes cash prizes have been increased from three to five and six. Stall fees in this section have been reduced about 50 per cent since the last fair and altogether the conduct of the department has been quite in keeping with the needs of exhibitors. The judging has been brought forward to Monday, the opening day, and in most cases each breed has had a judge of its own. The parades of horses in front of the grandstand each afternoon were highly interesting features of the entertainment provided for the crowds.

THE PERCHERONS.

An exhibit of history-making character came forward under these colors. There have been stronger rings of aged stallions, but it quite taxed memory to recall so uniformly excellent a collection of three-year-olds—a class so even in strength and so free from sub-standard animals. All through the male classes there was a capital exhibit, and it is hazarding nothing to write that so great a show of Percheron females has not before been assembled in America. Herein is found great cause for congratulation, and the results of the contest emphasize again what is so generally known, that we can breed the big horses just as good on this side as on the other, if we have the right material. The adjudications fell to the seasoned and discriminating eye of Alexander Galbraith, Janesville, Wis., and left small ground for criticism or revision.

Among the aged stallions Mr. McMillan's well known Olbert was the leader. He is somewhat drawn of middle, but an all round estimate would set him at the head, with his grand size and bone and his free stride. The Singmasters' gray Alger, second at Nogent this year, was counted on to win this class, but many of the importations of the season have shipped quite badly and he was among those that have had trouble. He will need time to pull himself together again, when he should certainly prove a very formidable contestant in any company. Banquet has a grand top, a draft horse middle and back and Guignol is also splendid in his top and an easy goer. The three-year-olds numbered twenty and cut out the work for the judge a plenty. The Singmasters were particularly stout in this sensational company and three of their colts landed on the prize list. No attempt at individual comment is made, but the class is left with a repetition of the compliment that it was of very unusual excellence. The two-year-olds appeared to be quite well grown, some of them so far forward that the "vets" took a look at their teeth, but none was disqualified.

In the collection of aged mares there appeared two Paris winners in the pair with which the Singmasters got second and third honors here. The pick of the company was found in the beautiful black Victorine, which Mr. McMillan bred—one of the real Percheron type, with symmetrical body, rare quality and superb finish, and a weight around a ton. The Singmasters were in the front rank among the three-year-olds with capital specimens of the breed, winning the blue ribbon, while the red went to Patterson & Erickson of Minnesota on a choice filly. The two-year-olds continued the excellence of the females and its head also came from the Singmaster farm, a black of most admirable sort. The second prize filly in this class was also of splendid character. Along down the lines, through all the group prizes and specials, appeared the most gratifying evidences of a determination to acquire the best of the French stocks of mares and of marked success in mating them.

CLYDESDALES.

Speaking of a clean, attractive standard exhibit of any breed, the Clydesdales presented it here. It was almost uniformly a capital illustration of the excellencies to which breeders have bent their efforts for many years. The Scotch foot and feather were in palpable evidence and in addition form and substance took on approved draft horse standard. Numbers were sufficient to give proof of continued interest in the breed, which was accentuated by the very impressive displays of mares and fillies. Clydesdale breeders have long prided themselves on the accuracy of action which they have developed in their horses, and it was particularly apparent in the contestants in this arena. Exhibitors had the benefit of the services as judge of R. B. Ogilvie, secretary of the American Clydesdale Association, Chicago, and the ratings were made with his accustomed accuracy.

It was a very impressive company of aged stallions and was headed by the International winner, Baron Doune, a stallion of well-marked balance of parts from head to heels, and one which should prove of much value in service. Prince Punctual, which has size and distinct masculine character, and stands over a lot of ground in impressive draft horse fashion, might have been higher in the running under other estimates, but there were some points of strength in Ethelbert on which to hang the decision as recorded. Baron Nisbet was somewhat wanting in condition, else his rank would have been more prominent; he is one to wait for. The three-year-olds were an excellent lot. Among the mares there was much gayety and snap and ample draft form and power. Not in recent years has the breed given so pleasing an exhibit in the female classes, down to the foals. It afforded no little comfort to the Clydesdale contingent to see so fetching a display of mares and fillies.

SHIRES.

A continuance of the exhibit of the quality-character displayed by the Shires at this show will win great extension of favor for the breed. It is to be hoped that we have done with the importation of the post-legged kinky-haired kind. Judging from the very attractive character of the lot seen at Des Moines, the old-fashioned sort is now only a memory, so far as the latter-day importations are concerned. The judge, W. E. Prichard, Ottawa, Ill., was greatly pleased with this feature of the exhibit and was free in his commendation of it—a valuable tribute from so reputable a judge. There could be no questioning the title of Premvictor to pride of place in the company of aged stallions, as he is in very attractive bloom. He has had a large season and needs not the prestige of his exhibition in the consignment sent last year by the King and Lord Rothschild to give him prominence this year. Broughton Mormaco is a very massive brown, distinctly better in his forelegs than the blue ribbon stallion, and altogether a drafty clean-legged sort. Girton Senator is an upstanding unfurnished black of grand presence and the way he marked it off up and down the arena when the Highland bagpipers entered was a caution. The three-year-olds combined a lot of weight with pleasing quality, and almost without exception presented feet and legs that were acceptable.

Dunsmore Rector is one to watch out for, as he is destined for high rank by reason of his toppiness, his substance and his stout and clean underpinning. The right sort of bone and feather is found in the black two-year-old Beachendon Fascination, and he has the body that fills the eye. It was the same story here—bigness of hoof, length and set of pasterns, flatness of cannon bones and a nice quality of hair. Mares were in small numbers, but among them the three-year-old Prospect Gloaming must be mentioned as one of the best that has crossed the water.

THE BELGIANS.

Importers of Belgians are wise in their day and generation. They evinced the most accurate knowledge of the tastes of the American breeder of draft horses and are exerting themselves to meet it. It is not strange that this breed has grown rapidly in popular favor. When such bulk and power can be brought into the ring on such acceptable underpinning it is bound to meet with favor. Certainly exhibitors are to be congratulated on the showing they presented to this ring of the Belgian horses. It is to be regretted that a couple of the three-year-olds and one two-year-old were disqualified by the official veterinarians as over age. They belonged to W. W. Garner. The roan Robert horse of Finch Bros. has developed into a magnificent specimen of the breed and made an impressive winning here. Another red roan that holds high promise is the two-year-old shown by the same exhibitors.

A good representative of ihe American carriage horse.

AMERICAN CARRIAGE HORSES.

The new class for American Carriage Horses, for trotting-bred horses of suitable size and conformation, had a lot of entries, and few blue ribbons. The judge, W. A. Dobson, Marion, Iowa, a dealer in carriage horses, could not find one worthy of a blue ribbon in the first seven classes before him. In a foal he finally came upon one that he believed would make a good seller in heavy leather if he developed according to promise and showed sufficient action.

HACKNEYS.

Only a few Hackneys were shown, but they included Prickwillow Connaught and Queen of Diamonds, two of the top-notchers in this country. John Garrison, of Des Moines, judged them.

MORGAN HORSES.

When the blue ribbon was awarded to the high-headed, long-backed, wasp-waisted, spindle-shanked leggy Golddust Abdallah, an aged Morgan stallion, the dust of Justin Morgan must have collected itself into form and rolled over in its grave. There was a real old-fashioned Morgan in the ring and he was third prize. Mr. Bell, of the animal husbandry division of the department of agriculture, made the awards. The passing of the Morgan could not have been more plainly proved than in this class.

SADDLE HORSES.

Some fair good specimens of the gaited saddle horses were shown and judged by A. W. Hawley, Pioneer, Ia. The handsome cup, offered by the American Saddle Horse Breeders' Association for the best stallion, mare or gelding, was won by the ever-youthful and brilliant Jack o' Diamonds.

SHETLAND PONIES.

An astonishing exhibit of these diminutive ponies was made, the aged stallion and the aged mare rings numbering a score each. Some very capital specimens appeared throughout the class, and very few poor ones were to be found. The usual variation in height was apparent, but for the most part the exhibit was pleasing and indicates clearly the very large interest at present manifested in the breeding and use of Shetlands. Eight pairs of ponies in harness were in the ring.

Twentieth Century Farmer, Omaha, Nebraska.

The Iowa State Fair of 1907 has come and gone, recording one of the greatest agricultural events of the twentieth century. The Iowa State Fair has probably no equal in the United States as an agricultural show and exposition, covering as it does so completely the varied and diversified industries of general agriculture, as found today in the great grain growing and live stock producing agricultural belt of America.

The Iowa State Fair is the product of the Iowa State Board of Agriculture, an organization of the people, in whose hands have been entrusted the administering of the agricultural exhibition interests of the State. That this trust has been well reposed and that efficient and trustworthy men have been selected for the active duties of carrying out the great objects and aims of the organization, in furthering the work of agriculture by agricultural education, is fully verified by the rapid and permanent growth of this fair.

"Iowa is a great State," is the oft-repeated expression of the Iowan. There is, however, a truism in the expression, no matter in what words clothed or how vain and boastful this self-evident truth is announced. Iowa has in recent years developed in agricultural conditions far beyond the average State. It has not alone developed in its soil producing ability, but it has developed along with this every kindred interest and industry, until its manufacturing and business standing is on the same high plane of prosperity.

"IOWA IS A GREAT STATE."

Iowa is today an active producing district of country. Few states have a smaller area of waste lands. Each year its farms are receiving more attention in kinds of crops produced, and better tillage. The voice of the scientific agriculturist and farm crops educator is being heard and his suggestions and admonitions heeded. The State is growing more populous through its division of large farms into smaller holdings. Its villages, towns and cities are building, improving and widening out as the increased production from the farms demands. The farm being the basis of all business prosperity, in its increased or decreased producing ability will rest the success or failure of business enterprise, dependent thereon. Again we join with the Iowan in the most friendly and earnest expression, "Iowa is a great State."

Iowa in its State fair grounds and location has planned well. Too much credit cannot be given to the promoters of the new fair grounds, where the fair has been held for several years. The distance from the city of Des Moines is not objectionable; the large acreage is not excessive, as the various demands of this show enterprise keeps crowding farther and farther back each year. It is only a matter of a few years at its present rate of growth until the entire space within the gates will be fitted up and occupied with some form of exhibition, concession or State fair building.

The transportation plans and facilities of street car and railroad trains for carrying the people to and from the fair grounds could not well be improved upon. It is safe, rapid and well handled by every interest concerned in the transportation traffic. The fair grounds depots, platforms and enclosures offer protection to the crowds so that an accident is almost an impossibility.

LIBERTY OF THE SIGHTSEER.

When the crowds are once within the gates they are free to roam at will over the hundreds of acres of beautifully shaded and grassed lawn, with streets, walks and drives leading to all parts of the fair grounds. No annoying signs, "Keep off the grass," are to be seen anywhere. The stranger within the gates can walk on the beautiful sward to his heart's content; he can lay down, roll over and go to sleep if he chooses; no one to fear, no one to make him afraid. There are, however, in sight everywhere on the grounds, big, uniformed policemen, but their clubs hang peacefully by their sides, and their pleasant, courteous manner invites questions, which they delight in answering, and otherwise assist the weary sightseer in finding his objective points of interest on the fair grounds.

The Iowa State Fair grounds are each year adding new features of interest by the erection of one or two new buildings, to relieve the cramped condition of some department that has not room for its exhibit or the building not in accord with the general plan of architecture on the grounds.

The feature of sensation this year in building is the new hog barn. This is without question the largest exhibition hog barn in the world. It will accommodate approximately 3,000 hogs and may be added to, so as to accommodate the possibilities of increased exhibition demand for all time to come. It is not only large, but it is conveniently laid off into streets and blocks and lettered so that each exhibitor may be readily located when his correct address is known. The building is airy, cool and well lighted. It is highly satisfactory to the hog men for whom it was built. It is the greatest advertisement the Iowa State Fair has ever had in the way of fair grounds improvements. It was provided by an appropriation of $75,000 by the last legislature after an urgent demand of the swine growers of the State.

GREAT HOG EXHIBITION CENTER.

Iowa is the greatest hog producing State of the Union. It is not only a hog exhibition State, demanding large space at its fair for the exhibition of its pure bred herds, but it is also a popular State away from home, in its hog producing and hog breeding interests. Large numbers of good exhibition hogs come to the Iowa State Fair from all over the hog raising districts of the United States. It is the general and local exhibition interests that combine to make the Iowa State Fair the great hog exhibition center.

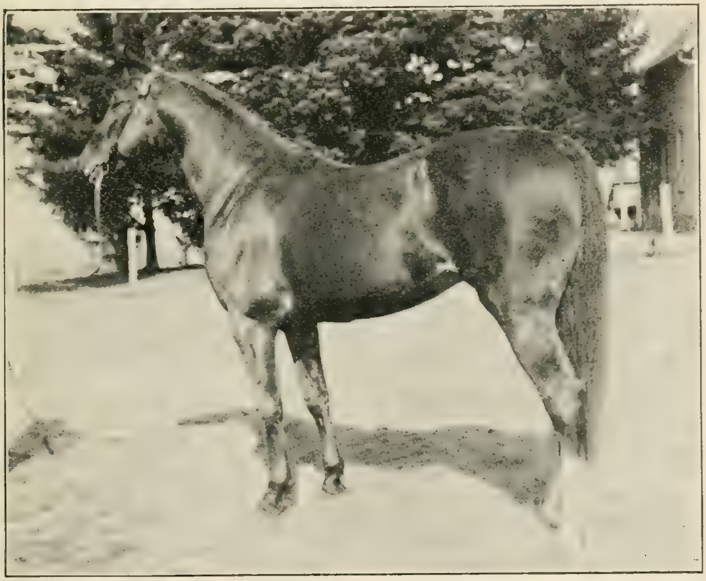
In hog production Iowa, in comparison with the five leading hog growing states on January 1, 1907, stands as follows: Iowa, 8,584,500 head; Illinois, 4,419,705 head; Nebraska, 4,080,000 head; Missouri, 3,544,950 head; Indiana 2,924,879 head. It will be observed that Iowa has almost double the hog population of any other State and more than the combined population of the next two leading states, Illinois and Nebraska. These figures will in a measure explain Iowa's position as a hog exhibition State and why it deserves just such a $75,000 hog barn on its State Fair grounds

The interest in the swine department of this fair has been steadily increasing and exhibitors have been added each year for a dozen or more years in such numbers as to plainly indicate a healthy growth in the pure bred interests of the State. The number of hogs exhibited last year, 1906, as compared with the present year, 1907, were: Poland-Chinas, 1,162; Duroc-Jerseys, 1,001; all other breeds, 705; total, 2,868. This year: Poland-Chinas, 950; Duroc-Jerseys, 1,180; all other breeds, 706; total, 2,836. The present year's show was represented by 206 owners, individuals and firms.

HORSES CAPTURE THE VISITORS.

The horse department was, as usual, full, and a great attraction. In the judging pavilion the audience was greater during this entire show than the seating capacity of the building could accommodate. The large string of finely-groomed horses, with their flash and dazzle of ribbons and splendor, seemed to captivate the visitors and they never grew weary of their seat in the horse show. Every conceivable style and breed of horse was to be seen that was worth looking at, from the immature little Shetland pony up to the great draft horse of a ton or more in weight.

The American-bred horse and the American breeder met the importer and the imported in the same ring on the same terms of show ring demands as have prevailed, and are still the friends and admirers of their former fancy, notwithstanding an adverse distribution of the blue, the red, the yellow and the purple may have been ordered. The horse show is a great feature at the Iowa State Fair and especially has the heavy horse of the draft type been an especial favorite with the Iowa farmer and Iowa buyer. Iowa has become largely interested in the production of draft horses. This is one of the rapidly developing industries of the State, and no district of country is better prepared today to give this feature of live stock production attention than is Iowa.



American carriage horse "Wilbrino Boy" owned by E. J. Bronhard, Colo, Iowa.

The cattle show was not only interesting in point of numbers entered, but in quality and show ring finish; there was more than the usual appreciative comment from the visitors. A fine, well conditioned lot of show stock meets with the quiet approbation of thousands of sightseers, and may be seen to count for nothing in the light of show ring appreciation, yet there is an impression carried away which helps form public sentiment that reverts to the good of the live stock industry.

The Short-horn cattle were in numbers and interest in the lead with the breeders and exhibitors. The very strong classes that were shown excited great interest among the visitors and a great deal of guessing was indulged in as to what animals would be selected as the prize winners by the expert judges. The beef breeds were all strongly backed by their fanciers and the best breed is still a matter of dispute with the best cattle judges of the country. The show ring has never fully settled this question and never will, notwithstanding its great influence in moulding public opinion.

The fine show of breeding cattle that is made at the Iowa State Fair and the great number of good herds that stand to the credit of the State, is again reflected in a more convincing and practical demonstration of beef cattle improvement, by the superior quality of its common farm herds that are to be seen by the stranger as he travels over the State. State fairs are not all a key to the State improvement and State conditions, but Iowa's State fair is.

CATTLE AND HOGS AT IOWA FAIR.

So that our readers may have a clear idea of the growth of the cattle and hog show at the Iowa State Fair we print tables showing the number exhibited for the last six years:

Cattle	1902	1903	1904	1905	1906	1907
Short-horns	106	138	176	123	160	250
*Polled Durhams	....	....	....	41	24	43
Herefords	69	105	68	121	89	80
Aberdeen-Angus	108	91	105	101	85	95
Galloways	62	45	57	51	43	61
Red Polled	42	40	47	36	80	53
Total	387	419	453	473	481	582

* Polled Durhams were shown with Short-horns prior to 1905.

Hogs	1902	1903	1904	1905	1906	1907
Duroc-Jersey	403	853	886	768	1,001	1,180
Poland-China	777	1,074	980	1,071	1,162	950
Chester White	366	435	409	469	462	474
Berkshire	168	209	92	107	169	73
Yorkshire	....	5	56	....	35	69
Tamworth	....	....	....	....	41	88
Hampshire	....	....	....	....	....	2
Total	1,174	2,576	2,423	2,415	2,870	2,836

IMPORTED MUTTON SHEEP THE FAD.

The sheep department of this fair has been steadily improving in numbers and quality of animals exhibited, until it has attained a standing among the good sheep shows of the country. In the mutton breeds there was an exceptionally good lot of animals, especially in the Shropshire, Oxford and Hampshire classes was the show close and evenly contested by half a dozen leading exhibitors of the country. The imported mutton sheep is the fad now among breeders and handlers and their growth and show ring preparation is hard to excel.

The prefix "Imp." stands for much at the present time with the breeder and dealer in this class of sheep. It means about 100 per cent added in price over the American-bred sheep of same quality. English imported is the desirable animal. The Canadian is not valued much above the home-grown American, unless of greatly superior quality. The prices now prevailing for rams of breeding age is anywhere from $100 to $150, depending, of course, on the quality and finish of the animal and the elasticity of the conscience of the seller.

Most breeders buy reputation now days, when getting a breeding animal, and are willing to pay a good price for it. It is a good thing for a breeder to have, especially when it can be used as a commodity in the market. It is often cheaper to buy it in the purchase of a good animal than to attempt to breed up to it.

SOME OF THE DISADVANTAGES.

The fine wool classes were not well filled, there being little competition in the American Merino and Delaine Merino class. The throwing of these two breeds of sheep together as one class worked a great disadvantage to the exhibitors and judge, as they are directly opposite in style and finish, and cannot show together in fairness any more than the coach horse and the saddle horse. The showing of outdoor field sheep was another feature of disadvantage that one breeder saw fit to add to his chances of defeat, which are always sufficiently strong in the show ring under the best system of care and attention.

The Rambouillet, or French Merino class, was well represented with the usual well-fitted and half-fitted representatives in the ring. The variation that this breed of Merinos encourage and maintain in breeding character, both in form and fleece, gives rise to much difference of opinion as to which should be encouraged. The desirability of a strong-charactered animal as a breeder, with heavy, close turned horn, broad head, short, strong neck with some folds about the neck, and heavy dewlap, are recognized properties with experienced breeders in maintaining density of fleece and guarding degeneracy of the one important property of this breed, a large, desirable fleece of excellent wool.

So desirable have been these qualities in the Rambouillet sheep that over-zealous breeders, it is feared, have gone out of the beaten path of close adherence to family blood and breeding and introduced American Merino blood as a quick and sure way of attaining the desired end. This method, however, carries with it some danger of overdoing the work and producing in the cross a sheep of decidedly American Merino character. A better sheep in many cases than either of the breeds distinct.

The machinery department affords one of the most generally interesting features of the fair. This department has outgrown State fair limits, practically, and might be classed a machinery exposition. It would require several days' constant travel to even take a peep at the thousands of things that are on display in this division of the fair grounds.

When one stops to consider what constitutes this great exhibit that takes many heavily laden freight trains to bring to the Iowa State Fair, there may be some realization of what is to be seen there. Added to the immensity of this great display the fact that it is almost entirely an exhibit of farm machinery, farm implements, farm tools and appliances of one kind or another for the aid of farm operations, the mind then begins to comprehend the importance of the farm.

The increased interest on the part of manufacturers and dealers in farm machinery may be guessed at, when we say that in addition to the large acreage platted and staked for machinery last year and which accommodated one of the largest machinery exhibits ever made at a State fair, up to that date, required an additional five acres for the show of 1907. In addition the open ground which is filled with tents and temporary sheds and buildings for housing these displays, there is a regular machinery town built. It is laid off in streets where permanent machinery exhibition halls are erected and equipped with all the comforts of the modern State fair building. The State fair management owns four very large buildings in this section from which exhibition space is sold at so much per square foot floor space. There are in addition to these more than a score of exhibition buildings erected and owned by manufacturers from various parts of the country, who use them each year free of rent or charge of any kind.

A special attraction in the machinery department is the Pittsburg Steel Wire Fence company, manufacturing wire fencing; welding the wires by electricity instead of looping or weaving the wires. The novelty of this work is the attraction. The machine which is used weighs eight tons and is said to have incurred an expense of $3,000 to put it in operation on the Iowa fair grounds. This is only one of the many interesting and startling features of manufacture that is being carried on for the entertainment and edification of the visitor.

The Iowa Agricultural College made quite an educational exhibit under the auspices of the experiment station, with Professors Beech and Little in charge. They showed up some fifty varieties of apples from the station. Some of these were Russians that had been imported by Professor Budd away back in the '80s and had been tried and tested over a large extent of territory and were proven to have much value. Others were hybrids and seedlings and were produced by different plant breeders and also the outgrowth of the work of the experiment station. They exhibited many varieties of plums, many of them showed crosses with very marked distinction, and one could see that with the line of work in hand by the college that great good would be accomplished in the future in building up fixed types of fruits adapted to our different soils and climatic conditions, that we even have in Iowa. Professor Beech exhibited some fine samples of the Craghead gooseberry, which is attracting a good deal of attention at the present time in Utah and western states. It is no doubt a hybrid, but shows strong markings of the native wild gooseberry, only in size it is larger than Downing, perfectly smooth, with a very thin skin, with a delicate pulp and few seeds. The professor thinks that it is worthy of trial by the fruit growers and experiment stations of our State. He thinks there is no doubt but what it will prove hardy and if it does it will prove an acquisition to our small fruit list. The Beta grape which was exhibited will also have a great future for planting away up in the Dakotas and Minnesota. It is only an improved, large variety of wild grape, but it is so compact in bunch, healthy of vine and foliage, and able to stand very low degrees of temperature, that we see no reason why grape growing cannot be pushed a degree further north, with the great possibility of some hybrids of this variety adding others to the list. From what we could see and learn the Iowa experiment station is doing great work.

DEPARTMENT OF AGRONOMY.

The experiment station of the Iowa Agricultural College made a very fine artistic display in the agronomy department, which was composed largely of specimens of corn that had taken premiums in different corn shows and fairs in the last year. But they had in evidence their many prizes and trophies which had been awarded this department in the last few years. Professor Bowman and his able corps of assistants were there explaining to the farmers that it was not expected of each farmer that he would run a scientific experiment station, but by the proper selection of seeds of different kinds that the farm crops could be doubled many times from 30 to 50 per cent. They showed their experience in wheat growing, different grasses and other farm products. The good derived by farmers in coming in contact with these gentlemen is not to be calculated in dollars and cents, and pays Iowa or any State many fold the money expended in giving back to the people the information that they want along these lines. The artistic corn displays in this department were very large and some of them very fine, indeed, and it was the opinion of the experts in corn growing and breeding that the corn display was one of the best ever shown and gave evidence of high degree of work in this line. It was highly spoken of by experts.

CATTLE DEPARTMENT.

SHORT-HORNS.

This year's Short-horn show at the Iowa fair was by unanimous vote by far the greatest and best ever witnessed by visitors at that great exposition. It outnumbered last year's exhibit by nearly 100 head and at the same time there was greater merit throughout. The long classes of beautiful beefy forms clad in rich robes of red, white and roan were indeed an impressive sight that will long remain in the memory of Iowa fair visitors who admire good cattle. While Iowa made the largest contributions, the five other states represented made competition pretty hot for the former, who frequently had to be satisfied with the money awarded for Iowa breeders only. There were some notable exceptions, however, as the list of awards will show. On frequent occasions the judge found his task exceedingly difficult and, after the first few classes had been disposed of, Mr. E. B. Mitchell was called in to assist.

HEREFORDS.

"What's the matter with the Hereford breeders?" was a question frequently asked at the ring side. Somehow the classes as they passed seemed to leave the impression that the Hereford end of the show was far below the standard that had been set at stock shows in previous years.

There is no doubting that the breeders of this race of cattle have the "goods," but they certainly failed to bring them out in sufficient number on this occasion. True, there were several very acceptable individuals, but the tailenders were usually very weak. It is to be expected that the Hereford men will realize that there is danger of allowing the favorite breed of a multitude to sink into undeserved obscurity through lack of proper exhibitions.

ABERDEEN-ANGUS.

This is the breed in which Iowa alone can make a great showing without the aid of other states. Of the twelve exhibitors only one was from another state, and yet the show was a very good one, with the exception of a few classes. The bulls were somewhat of a disappointment, but when the female classes began to appear the Angus side of the pavilion immediately attracted its share of attention. On the whole the breeders of the famous "doddies" have reason to congratulate themselves on the splendid showing. The exhibit was somewhat larger than last year, but there was probably a slight falling off in average quality.

GALLOWAYS.

A decided improvement was noted in the Galloway show over that of last year. There were more of them and they were better. Another commendable feature was the good condition in which most of the entries appeared. This is a matter on which Galloway breeders had previously been subject to adverse criticism, and it is well for them and their breed that the fault has been remedied for the present season. The judging was very carefully done and seemed to give universal satisfaction.

RED POLLED.

Considering the fact that only four herds were represented, the Red Polled contingent was as good as could reasonably be expected. The exhibit lacked somewhat in the uniformity that usually prevailed, but averaged very well. As usual, the judge had difficulty in placing the awards in the "double decker" rings, where evidence of meat and milk producing capacity is desired in proper combination.

POLLED DURHAM.

The breeders of Polled Durhams came out stronger than usual. Had some of the cattle been fed a little more liberally they would have strengthened some of the classes very materially. A select few stood out rather prominently because of individual merit and proper fitting.

JERSEYS.

The Jersey exhibitors, although few in number, showed a very choice lot of cattle. This was especially true of the female classes, where a high average quality usually prevailed. Hunter & Smith of Beatrice, Neb., led in the winnings.

HOLSTEINS-FRIESIANS.

While a few high class Holstein-Friesians appeared, the exhibit as a whole scarcely did the breed justice. Only three exhibitors were present and, with the exception of the aged cows, the classes were small and usually ragged.

HORSE DEPARTMENT.

PERCHERONS.

There was a splendid showing in the Percheron classes. There was a falling off in numbers from last year's entries, but nevertheless there was quality in abundance. Several importers that are in the habit of showing at the Iowa fair did not appear on this occasion. Consequently some of the stallion classes were scarcely as strong as they have been on previous occasions. The splendid exhibit of mares and American-bred horses is worthy of comment here. There were indications of increasing interest in the horse-breeding industry and the product of some of the breeding farms in several instances proved to be superior to their imported competitors.

BELGIANS.

The aged Belgian stallions and the three-year-olds, as well, were an extraordinary bunch of heavy drafters. Powerful horses stood in line, with great bone and muscular development that could not fail to attract the visitor interested in draft horses. Beyond the two classes mentioned only a few individuals were entered. The awards were made in an able manner by W. E. Pritchard of Ottawa, Ill.

CLYDESDALES.

The character of the rather small Clydesdale exhibit was unusually good. A few specimens represented almost the highest type of the breed and there were few of the ordinary sort. It was a show that made a good impression by virtue of its quality rather than magnitude. Some excellent American-bred horses were shown.

SHIRES.

There were only five exhibitors of Shires, with a total of thirty-three head. It was a fairly good show, in spite of these facts. There was plenty of competition in the stallion classes and it took a good horse to win a blue ribbon or even a red. It was frequently observed that several of the winning horses showed much more quality than is usually found in horses of such weight. Certainly some of the leading stallions did not lack in cleanness of bone.

SWINE DEPARTMENT.

The hearts of swine breeders were made glad at sight of the new swine pens and judging pavilion. Last year they were obliged to house their magnificent stock in poorly constructed sheds and flimsy pens and in order to have room for it were compelled in many instances to place five times as many hogs in a pen as should be placed there for the comfort and good of the hogs.

The new sheds are not surpassed by any in the world and the only criticism which can be made is that an additional shed might have been placed along the vacant side. This would have necessitated the building of the pavilion in the center of the court, but ample room would have been left for the exercise of the hogs. Some of the additional room might have been used this year, for we are told by the superintendent of swine that he was obliged to turn down many applications for pens because of the lack of same.

Last year the hogs for judging were placed in hurdles scattered promiscuously over several acres of ground, among sheds and tents, and along the paths. The judges were compelled to do their work with hundreds of people gathered around the hurdles. This year the new pavilion gave a pleasant change. A fence separated the workers from the sightseers and work was carried on with comfort during the hard rains which frequently visited the fair. Iowa is to be congratulated on its new swine buildings.

The number of hogs on the ground this year was not as great by thirty-six as last year. There were the same number of breeders showing as last year. We have prepared a table for reference which we think breeders will find interesting. It shows at a glance the number of breeders making exhibits, and the number of hogs shown in each breed during the last three years. The Duroc-Jersey gained in number this year while the Poland-China lost. Last year witnessed the showing of two new breeds, the Yorkshires asd Tamworths, while this year brought in one more, the Hampshires. Following we print the table:

Hogs	1905		1906		1907	
	*	†	*	†	*	†
Duroc-Jersey	54	768	81	1,001	91	1,180
Poland China	85	1,071	97	1,162	83	950
Chester White	25	469	22	462	24	474
Berkshire	6	107	8	167	5	73
Yorkshire	....	....	2	35	4	68
Tamworth	....	....	2	41	5	88
Hampshire	....	....	....	....	1	2
Totals	170	2,415	212	2,868	213	2,835

Total for 1904, 2,423; 1903, 2,576.

The general impression prevailed that the show was of better quality than last year. Some strong hogs appeared in every breed, while in the two large breeds many excellent ones were shown. All told it is probably the greatest and best hog show of the year. A ribbon won at the Iowa fair is not to be overlooked in breeding circles.

DUROC-JERSEYS.

The Duroc-Jerseys led in numbers. It has been increasing in numbers and quality for several years and this year was no exception to the rule. Everywhere were heard remarks as to the excellency of the showing as a whole and the outstanding breed characteristics of many of the individuals.

The very first showing set the tongues of the onlookers wagging with wonder. Twenty-two big Duroc boars over 2 years old were walked into the ring, and for the most part they were a fine lot, well finished and well balanced. The senior yearlings did not make such a good showing and was perhaps as weak as any of the classes shown.

A judge untried in western fields, in the person of Mr. Drake, did the work. His work was consistent and on the whole satisfactory. There is always an element of dissatisfaction in every large ring, and it is probable there always will be as long as man is human.

Kruger Lad was a remarkable boar and had a strong following for the championship, but the judge saw more good points in Red Wonder.

The red men are happy and say next year will see them still stronger in numbers and quality. All the Duroc exhibitors were from Iowa but eleven. Nebraska, Missouri, Illinois, Indiana and Ohio were represented.

THE POLAND-CHINAS.

Taken as a whole the Poland-China show was about the same as last year, which means that it was a fine showing. Many Poland-China friends were disappointed, however, and called the show only average. The champion boar was very smooth and of the compact order. He was not an Iowa product. He was sold during the fair for $5,000.

The young boars showed up stronger than last year and the same was true of the young sows.

There were not as many Poland-China breeders present as usual, nor as many of the breed. This was also rather a disappointment to the friends of this great lard producer.

CHESTER WHITES.

Next in order or importance, as far as numbers go, and in points of excellence, come the Chester Whites. More and better hogs and more exhibitors sums it up fairly well. Mr. Gentry, who judged this class, was not sparing in his compliments to the breeders. Humbert & White again carried off many important ribbons. Their exhibit showed the customary bloom and finish. The Chester White men may well feel proud, for their herds were complimented on all sides.

BERKSHIRES.

The Berkshire show would be classed by the college youth as "rotten." In our comments on this class last year we gave our readers the word of the Iowa Berkshire breeders that they were going to show the other breeds in 1907. Last year they had eight exhibitors, with 167 hogs. This year there were five exhibitors, with seventy-three hogs. Last year the quality was average to good. This year it was poor to average. The judge was a Berkshire man, but had very few words of praise for the showing at Iowa. It was one of the poorest showings he was ever called upon to judge. If the Iowa Berkshire men want to keep in the procession they should make an effort next year to bring the best hogs of the State out. All the exhibitors this year were from Iowa.

MEETING OF THE EX-OFFICERS AND DIRECTORS OF IOWA STATE AGRICULTURAL SOCIETY.

President's Office, State Fair Grounds,
August 27, 1907.

Pursuant to a call issued by Hon. E. F. Brockway and others the following ex-officers and directors of the Iowa State Fair met at the president's office to form an association: L. S. Coffin, Fort Dodge; N. S. Ketchum, Marshalltown; M. J. Wragg, Des Moines; Albert Head, Jefferson, L. H. Pickard, Harlan, Geo. C. Duffield, Keosauqua; Al. L. Plummer, Altoona; W. W. Morrow, Afton; John A. Evans, J. P. Manatry, Fairfield; J. D. Brown, Leon; C. S. Wells, Knoxville; E. F. Brockway, Letts; G. W. Franklin, Des Moines; John Cownie, Des Moines; B. J. Moore, Dunlap; A. H. Grisell, Guthrie Center. On motion John Cownie was made president of the meeting and A. H. Grissell secretary. The meeting then resolved itself into a series of reminiscences by the following: John A. Evans talked of the contrast in the times now and when he was president. Geo. Duffield spoke of the growth of the fair since the first one was held in Fairfield, and which he attended, and all since. J. D. Brown and L. S. Coffin spoke of the location of the fair on its present site, and the objections made thereto. Captain Head spoke of the growth of the fair and its benefit to the farmers of the state. N. S. Ketchum gave a reminiscent talk which was interesting. E. F. Brockway gave an account of the trial of the fair in its early day and the adverse legislation of 1874, and contrasted it with the present attitude of the general assembly towards the fair. A motion was made and carried that this organization be permanent and that the temporary officers be the permanent ones, which was carried. On motion each Wednesday of the fair was to be set aside for the meeting of this association, place to be designated by the president of the fair. W. W. Morrow, in behalf of the fair, assured this association that every courtesy would be extended to them.

A. H. Grissell, Secretary. John Cownie, President.

AWARDS

In Live Stock Departments

Iowa State Fair and Exposition

1907

HORSE DEPARTMENT.

SUPERINTENDENT.............................C. F. CURTISS.

STANDARD BRED.

EXHIBITORS.

Tom Bass, Mexico, Missouri; E. J. Brouhard, Colo, Iowa; John W. Bruere, Tracy, Iowa; Cassidy & Thompson, Jamaica, Iowa; Fred Crawford, Des Moines, Iowa; Crawford & Griffin, Newton, Iowa; A. T. Cole, Wheaton, Illinois; W. H. Davis, Des Moines, Iowa; Wm. Grey, Mechanicsville, Iowa; W. A. Heck, West Liberty, Iowa; Tom James, Des Moines, Iowa; J. A. Mason, Carlisle, Iowa; W. L. Moles, Bayard, Iowa; Clara E. Monahan, Des Moines, Iowa; J. A. Minteer, Van Meter, Iowa; J. R. Peak & Son, Winchester, Illinois; Shaw Bros., Mitchellville, Iowa; Otto Shroeder, Des Moines, Iowa; James Watt, Des Moines, Iowa; Wilson Bros., Menlo, Iowa; J. P. Wilson, Indianola, Iowa.

AWARDS.

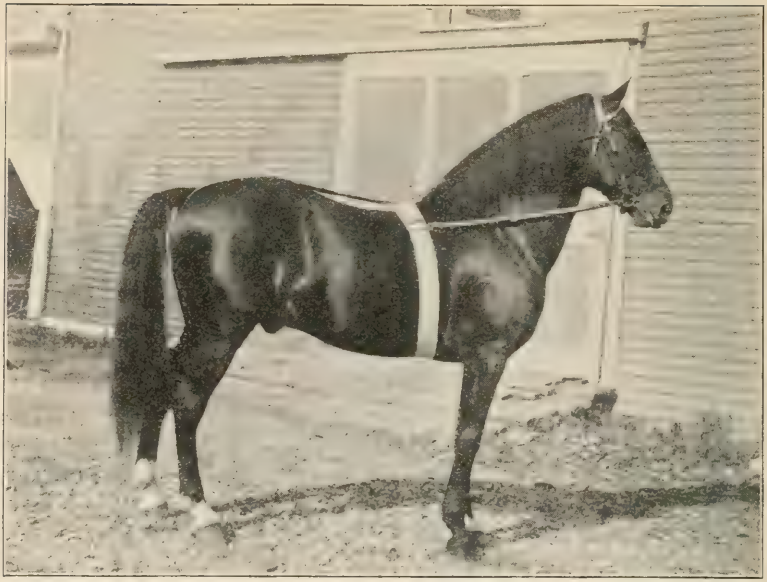
JUDGE..........................W. A. DOBSON, Marion, Iowa.

Stallion Four Years Old and Over—First, Hail Cloud 23606, James Watt; second, McNaught 37375, J. R. Peak & Son; third, Barondale 20184, Tom James; fourth, Iowa Sphinx, Jr. 33654, Wilson Bros.; fifth, Kokane 40095, A. T. Cole.

Stallion Over Three and Under Four—First, Red Francis, J. R. Peak & Son; second, Prince IXL 43530, J. A. Minteer; third, Golddust-Abdallah 43052, A. T. Cole; fourth, Elastic, Jr., Cassidy & Thompson.

Stallion Over Two and Under Three—First, Jerry Devon 42679, W. L. Moles; second, Malta Vita, J. R. Peak & Son.

Stallion Over One and Under Two—First, ———— J. A. Mason; second, Orange Leaf, J. R. Peak & Son; third, ———— Tom James.



''Kokane'' a prize winner in the American carriage class at the Iowa State Fair and and Exposition 1907.

Horse Foal—First, ———— E. J. Brouhard; second, ———— E. J. Brouhard.

Mare Over Four Years Old—First, Vivian M., Vol. 17, J. R. Peak & Son; second, Petra M., Tom Bass; third, Noretta, Vol. 17, J. R. Peak & Son.

Filly Over Three and Under Four Years—First, Marian, Vol. 17, J. R. Peak & Son.

Filly Over Two Years and Under Three—First, Lindy Girl, Vol. 17, J. R. Peak & Son; second, Lady Hail, Otto Shroeder; third, Baby Axineer, Vol. 17, Shaw Bros.

Filly Over One Year and Under Two—Noretta 2d, J. R. Peak & Son; second, ———— Tom James.

Mare Foal—First, May Hail, Fred Crawford; second, Anna Boyde, J. A. Mason; third, Lena Rivers, J. A. Mason.

Get of Stallion—First, J. R. Peak & Son; second, J. R. Peak & Son; third, Jas. Watt.

Produce of Mare—First, J. R. Peak & Son; second, Shaw Bros.; third, Tom James.

AMERICAN CARRIAGE HORSES.

EXHIBITORS.

Tom Bass, Mexico, Missouri; E. J. Brouhard, Colo, Iowa; John W. Bruere, Tracy, Iowa; A. T. Cole, Wheaton, Illinois; W. H. Davis, Des Moines, Iowa; E. J. Hadley, Grinnell, Iowa; J. A. Mason, Carlisle, Iowa;

S. B. Mills, Ames, Iowa; J. A. Minteer, Van Meter, Iowa; Clara E. Monahan, Des Moines, Iowa; J. J. Lynes, Plainfield, Iowa; J. R. Peak & Son, Winchester, Illinois; Shaw Bros., Mitchellville, Iowa; James Watt, Des Moines, Iowa; Wilson Bros., Menlo, Iowa; J. P. Wilson, Indianola, Iowa.

AWARDS.

JUDGE........................W. A. DOBSON, Marion, Iowa.

Stallion Four Years Old and Over—Second, McNaught 37375, J. R. Peak & Son; third, Ellerslie Russell, E. J. Hadley.

Stallion Three Years and Under Four—Second, Golddust-Abdallah 43052, A. T. Cole; third, Prince I. X. L., J. A. Minteer.

Mare Four Years Old and Over—Second, Vivian M., J. R. Peak & Son.

Mare Three Years and Under Four—Second, Marion, J. R. Peak & Son.

Mare Two Years and Under Three—Second, Lovey, J. R. Peak & Son.

Mare One Year and Under Two—Second, Cousin Elizabeth, A. T. Cole; third, Minnie Winburn, A. T. Cole.

"Burnie Brino", a prize winner at the Iowa State Fair and Exposition, in the American carriage class.

Mare or Stallion Foal—Second, Burnie Brino, E. J. Brouhard; third, Lena Rivers, J. A. Mason.

Get of Stallion—Third, J. R. Peak & Son.

Produce of Mare—Third, J. R. Peak & Son.

Pair of Mares or Geldings—Third, Lovely Lady and Boo Peek, J. R. Peak & Son.

GENTLEMEN'S DRIVING HORSES.

EXHIBITORS.

Tom Bass, Mexico, Missouri; R. Bonde, Story City, Iowa; John W. Bruere, Tracy, Iowa; W. W. Garner, Des Moines, Iowa; J. F. Garrison, Des Moines, Iowa; J. J. Lynes, Plainfield, Iowa; W. L. Moles, Bayard, Iowa; Clara E. Monahan, Des Moines, Iowa; Tom James, Des Moines, Iowa; J. R. Peak & Son, Winchester, Illinois; Shaw Bros., Mitchellville, Iowa; James Watt, Des Moines; Wilson Bros., Menlo, Iowa.

AWARDS.

JUDGE........................W. A. DOBSON, Marion, Iowa.

Driving Team (pair) to Pole—First, Black Bess and Melrose, Clara E. Monahan; second, Noretta and Vivian, J. R. Peak & Son; third, Miss Macklin and Baby Alice, Shaw Bros.; fourth, Bellmont and Clermont, W. L. Moles.

Single Driver to Harness—First, Vivian M., J. R. Peak & Son; second, Petra M., Tom Bass; third, Noretta, Vol. 17, J. R. Peak & Son; fourth, Black Bess, Clara E. Monahan.

HARNESS HORSES, AMERICAN OR FOREIGN BRED.

EXHIBITORS.

R. B. Brown, Newton, Iowa; R. Bonde, Story City, Iowa; W. W. Garner, Des Moines, Iowa; J. F. Garrison, Des Moines, Iowa; Clara E. Monahan, Des Moines, Iowa; J. R. Peak & Son, Winchester, Illinois; Shaw Bros., Mitchellville, Iowa; Truman's Pioneer Stud Farm, Bushnell, Illinois; Wilson Bros., Menlo, Iowa.

AWARDS.

JUDGE........................W. A. DOBSON, Marion, Iowa.

Matched Heavy Carriage or Coach Team—First, Pet and Flora, W. W. Garner; second, ———— R. Bonde; third, ———— J. F. Garrison; fourth, Midnight and Duster Maid, Wilson Bros.

Single Heavy Harness Mare or Gelding—First, ———— J. F. Garrison.

SADDLE HORSES.

EXHIBITORS.

Tom Bass, Mexico, Missouri; Ed Clapper, Unionville, Missouri; R. W. Crumpacker, Unionville, Missouri; A. S. Harris, Mystic, Iowa; Tom H. Jones, Lucerne, Missouri; Clara E. Monahan, Des Moines, Iowa; J. R. Peak & Son, Winchester, Illinois; L. F. Potter, Harlan, Iowa; A. J.

Richardson, Mystic, Iowa; W. O. Robbins, Unionville, Missouri; Mark H. Whitcomb, Cedar Rapids, Iowa.

JUDGE........................A. W. HAWLEY, Pioneer, Iowa.

AWARDS.

Gelding Four Years or Over—First, Jack O' Diamond 1794, Tom Bass; second, Top Notch, A. S. Harris; third, Oakland Chief, A. J. Richardson; fourth, Harold Diamond, Ed Clapper.

Stallion Four Years Old or Over—First, Grand McDonald, Tom Bass; second, Reckless Squirrel, Tom H. Jones; third, Cleburn Denmark, Ed Clapper; fourth, S. Russell, Clara E. Monahan.

Stallion Three Years and Under Four—First, McLeod, Mark H. Whitcomb; second, Dick Nailer, Tom Bass; third, Rex Le Grand Diamond, A. J. Harris.

Mare Four Years Old or Over—First, Eunice, Tom H. Jones; second, Melrose, Clara E. Monahan; third, Bessie Lee, L. F. Potter; fourth, Affable, Mark H. Whitcomb.

Mare Three Years Old and Under—First, Mamie, Tom Bass; second, Cherry, Mary H. Whitcomb.

Champion Stallion, Mare or Gelding—Jack O' Diamonds, Tom Bass.

WALK, TROT OR CANTER.

Stallion, Mare or Gelding, Any Age—First, Louis A., Tom Bass; second, Melrose, Clara E. Monahan; third, Harold Diamond, Ed Clapper; fourth, McLeod, Mark H. Whitcomb.

COMBINED HARNESS AND GAITED SADDLE HORSES.

Stallion, Mare or Gelding, Any Age—First, Grand McDonald, Tom Bass; second, S. Russell, Clara E. Monahan; third, Reckless Squirrel, Tom H. Jones.

HIGH SCHOOL HORSES.

Stallion, Mare or Gelding—First, Louis A., Tom Bass; second, McLeod, Mark H. Whitcomb; third, Cleburn Denmark, Ed Clapper.

SPECIAL CHAMPIONSHIPS. (Silver Cup).

Offered by the American Saddle Horse Breeders' Association.

Best Five-Gaited Saddle Stallion, Mare or Gelding—Jack O' Diamonds, Tom Bass.

SHETLAND PONIES.

EXHIBITORS.

Cassidy & Thompson, Jamaica, Iowa; H. C. Davis, Ames, Iowa; John Donhowe, Story City, Iowa; W. W. Garner, Des Moines, Iowa; Hanna & Bellamy, Harvey, Iowa; Geo. A. Heyl, Washington, Illinois; J. R. Peak & Son, Winchester, Illinois; J. F. Pease, Earlham, Iowa; W. T. Roberts & Son, Luther, Iowa.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa.

Stallion Three Years Old or Over—First, David Harum 4146, Geo. A. Heyl; second, Peter the Great, W. W. Garner; third, McDougal 5697, Geo. A. Heyl; fourth, Anton 4342, John Donhowe.

Stallion Two Years Old and Under Three—First, Dandy, H. C. Davis; second, Dale Harnett, Geo. A. Heyl; third, Teddy, Geo. A. Heyl.

Stallion Foal—First, Bob, John Donhowe; second, Colonel Harum, J. F. Pease; third, ———— H. C. Davis.

Mare Three Years Old or Over—First, Lucy Lee, Geo. A. Heyl; second, Cockatoo 2385, Geo. A. Heyl; third, Maud D., John Donhowe; fourth, Topsy 6424, John Donhowe.

Mare Two Years Old and Under Three—First, Garceful Harum, Geo. A. Heyl; second, Gladis Harum, Geo. A. Heyl; third, Gertie Harum, Geo. A. Heyl.

Mare Foal—Lady, John Donhowe; second, Nettie, John Donhowe; third, Queenetta Harum, Geo. A. Heyl.

Shetland Pony in Harness—First, ———— Geo. A. Heyl; second, ———— Geo. A. Heyl; third, Peter the Great, W. W. Garner; fourth, ————Geo. A. Heyl.

Pair of Shetland Ponies in Harness—First, ———— Geo. A. Heyl; second, ———— Geo. A. Heyl; third, Pearl and Gladys, W. T. Roberts & Son; fourth, Midget and Dandy, H. C. Davis.

Four-in-Hand Shetland—First, ———— Geo. A. Heyl; second, ———— Geo. A. Heyl; third, ———— H. C. Davis.

Tandem Team of Shetlands—First, ———— Geo. A. Heyl; second, Geo. A. Heyl; third, ———— H. C. Davis.

Shetland Pony Under Saddle—First, ———— Geo. A. Heyl; second, Pearl, W. T. Roberts & Son; third, Teddis, John Donhowe; fourth, Jolly Boy, J. F. Pease.

Shetland Stallion and Four of His Get—First, Geo. A. Heyl; second, John Donhowe; third, Cassidy & Thompson.

Grand Display—Best five animals bred by exhibitor: First, Geo. A. Heyl; second, John Donhowe; third, Cassidy & Thompson.

MORGANS.

EXHIBITORS.

C. T. Ayres, Osceola, Iowa; Cassidy & Thompson, Jamaica, Iowa; A. T. Cole, Wheaton, Illinois; J. J. Lynes, Plainfield, Iowa; S. B. Mills, Ames, Iowa; P. F. Smith, Montezuma, Iowa; Perry Wood, Marne, Iowa.

AWARDS.

JUDGE..G. A. BELL.

Stallion Three Years Old and Over—First, Golddust-Abdallah, A. T. Cole; second, Kokane, A. T. Cole; third, Green Mountain Boy, Perry Wood.

Stallion Under Three Years Old—First, Dart 5130, J. J. Lynes.

"Dart" Morgan stallion, first prize winner in class for stallion under three years old at Iowa State Fair and Exposition.

Mare Three Years Old and Over—First, Nellie, S. B. Mills; second, Nettie, S. B. Mills; third, Lady Morgan, C. T. Ayres.

Mare Under Three Years—First, Princess, S. B. Mills; second, Grace Roach, J. J. Lynes; third, Jessie Hudson, Vol. 3, J. J. Lynes.

HACKNEY.

EXHIBITORS.

Finch Bros., Joliet and Verona, Illinois; Alex Galbraith & Son, Janesville, Wis.; Leitch & Hathaway, Lafayette, Indiana; Trumans' Pioneer Stud Farm, Bushnell, Illinois.

AWARDS.

JUDGE....................J. F. GARRISON, Des Moines, Iowa

Stallion Four Years Old and Over—First, Prickwillow Cannaught (7573), Trumans' Pioneer Stud Farm; second, Hockwold Bordeaux (8190), Trumans' Pioneer Stud Farm; third, Ely Imperial (9208), Trumans' Pioneer Stud Farm; fourth, Ely Ringleader 8130, Finch Bros.

Stallion Over Three Years and Under Four—First, Bally Blaze, Trumans' Pioneer Stud Farm; second, Troutback, Finch Bros.

Stallion Over Two Years and Under Three—First, Glassmoor Prince (10013), Trumans' Pioneer Stud Farm; second, Ely's First Choice, Finch Bros.

Imported Hackney stallion, "Prickwillow Canuaught" first prize winner at Iowa State Fair and Exposition 1907.

Mare Over Four Years Old—First, Queen of Diamonds (17565), Trumans' Pioneer Stud Farm; second, Copalder Firefly (17887), Trumans' Pioneer Stud Farm.

Filly Over Three Years and Under Four—First, Truman's Beauty, Trumans' Pioneer Stud Farm.

Grand Display—Best five animals owned by exhibitor: First, Trumans' Pioneer Stud Farm.

CLYDESDALE.

EXHIBITORS.

Alex Galbraith & Son, Janesville, Wisconsin; W. V. Hixson, Marengo, Iowa; Leitch & Hathaway, Lafayette, Illinois; McLay Bros., Janesville, Wisconsin; James Pedley, Algona, Iowa; Frank P. Shekelton, Lawler, Iowa; A. G. Soderberg, Osco, Illinois; J. T. Stratton, Collins, Iowa.

AWARDS.

JUDGE........................R. B. OGILVIE, Chicago, Illinois.

Stallion Four Years Old and Over—First, Baron Doune 12613 (13254), Frank P. Shekelton; second, Ethelbert 12025, A. G. Soderberg; third, Prince Punctual 9644, McLay Bros.; fourth, Baron Nisbet 12563, McLay Bros.; fifth, Milton 13020, A. G. Soderberg; sixth, Rosemack 10406, W. V. Hixson.

Stallion Over Three Years and Under Four—First, Baron Clifton 12611 (13252), W. V. Hixson; second, Belleflower 13199, McLay Bros.; third, Black Acme 12855, A. G. Soderberg.

Stallion Over Two Years and Under Three—First, Golden Prince 12346, McLay Bros.; second, Merryman 13628, McLay Bros.; third, March On 2d 12486, A. G. Soderberg; fourth, Sefton 12331, W. V. Hixson.

Stallion Over One Year and Under Two—First, Royal Gordon, McLay Bros.; second, Black Prince 13018, A. G. Soderberg.

Horse Foal—First, ———— W. V. Hixson; second, King Charming, James Pedley.

"Queen of the Clydes" Mare four years old, prize winner at the Iowa State Fair and Exposition, shown by James Pedley, Algona.

Stallion Over Three Years Old, Bred by Exhibitor—First, Prince Punctual 9644, McLay Bros.; second, Rosemack 10406, W. V. Hixson.

Stallion Under Three Years, Bred by Exhibitor—First, Golden Prince 12346, McLay Bros.; second, Royal Gordon 12979; third, March On 2d 12486, A. G. Soderberg; fourth, ———— W. V. Hixson.

Mare Over Four Years Old—First, Princess Handsome 9758, McLay Bros.; second, Princess Goodwin 9849, McLay Bros.; third, Osco Sweetness 11114, A. G. Soderberg; fourth, Queen of the Clydes 10934, James Pedley.

Filly Over Three Years and Under Four—First, Mayoress 12582, McLay Bros.; second, Osco Bloss 12056, A. G. Soderberg; third, Lady Elegant 11846, W. V. Hixson.

Filly Over Two Years and Under Three—First, Palmerston's Darling 12332, W. V. Hixson; second, Bessie Sorbie 13213, McLay Bros.

Filly Over One Year and Under Two—First, Peach Blossom 12584, W. V. Hixson; second, ———— A. G. Soderberg; third, Fair Helen 12973, McLay Bros.

Mare Foal—First, Princess Refiner 13183, J. F. Stratton; second, ———— W. V. Hixson; third, ———— W. V. Hixson.

Mare Over Three Years Old, Bred by Exhibitor—First, Princess Handsome 9758, McLay Bros.; second, Princess Goodwin, 9849, McLay Bros.; third, Osco Sweetness 11117, A. G. Soderberg; fourth, Osco Bloss 12056, A. G. Soderberg.

Mare Under Three Years, Bred by Exhibitor—First, Peach Blossom 12584, W. V. Hixson; second, Palmerston's Darling 12332, W. V. Hixson; third, Princess Refiner 13183, J. F. Stratton; fourth, Fair Helen 12973, McLay Bros.

Get of Stallion—First, A. G. Soderberg; second, W. V. Hixson.

Produce of Mare—First, A. G. Soderberg; second, McLay Bros.; third, W. V. Hixson.

Grand Display—Four animals bred by exhibitor: First, McLay Bros.; second, W. V. Hixson; third, A. G. Soderberg; fourth, W. V. Hixson.

ENGLISH SHIRE.

EXHIBITORS.

B. M. Boyer, Farmington, Iowa; R. B. Brown, Newton, Iowa; Robert Burgess & Son, Wenona, Illinois; Crawford & Griffin, Newton, Iowa; Finch Bros., Joliet and Verona, Illinois; Alex Galbraith & Son, Janesville, Wisconsin; Leitch & Hathaway, Lafayette, Illinois; Singmaster Bros., Keota, Iowa; A. G. Soderberg, Osco, Illinois; Trumans' Pioneer Stud Farm, Bushnell, Illinois; Chas. J. Winter, Washington, Iowa.

AWARDS.

JUDGES.................. { W. E. PRITCHARD, Ottawa, Illinois.
W. J. KENNEDY.

Stallion Four Years Old and Over—First, Premvictor 8645 (19947), Robt. Burgess & Son; second, Broughton Mormaco (21215), Trumans' Pioneer Stud Farm; third, Girton Senator (20519), Trumans' Pioneer Stud Farm; fourth, Wiseman (24812), Trumans' Pioneer Stud Farm; fifth, Dearnsdale Pilot 9033 (23216), Robert Burgess & Son; sixth, Saxon Jet 21843, Trumans' Pioneer Stud Farm.

Stallion Over Three Years and Under Four—First, Dunsmore Rector (23277), Robt. Burgess & Son; second, Armthrope (23953), Trumans' Pioneer Stud Farm; third, Bury Client (23112), Trumans' Pioneer Stud Farm; fourth, Moulton Florizel 23514, Finch Bros.; fifth, Crossmoor Masterman (23205), Trumans' Pioneer Stud Farm.

Stallion Over Two Years and Under Three—First, Beachendon Fascination (23985), Trumans' Pioneer Stud Farm; second, Boro Regent (24051), Trumans' Pioneer Stud Farm; third, Keota Boxer 2d 8760, Singmaster Bros.

Stallion Over One Year and Under Two—First, Surveyor (24818), Robt. Burgess & Son; second, Moulton Dandy, Vol. 29, Finch Bros.

Stallion Under Three Years Old, Bred by Exhibitor—First, Keota Boxer 2d 8760, Singmaster Bros.; second, Keota Addison 8762, Singmaster Bros.; third, Finch's Buster Brown 8322, Finch Bros.; fourth, Lawrence 9112, Robt. Burgess.

Mare Over Four Years Old—First, Osco Spinet 7084, A. G. Soderberg.

Filly Over Three Years and Under Four—First, Prospect Gloaming, Vol. 27, Finch Bros.; second, Osco Sylvia 8206, A. G. Soderberg.

Filly Over Two Years and Under Three—First, Lady B. 8249, Finch Bros.

Filly Over One Year and Under Two—First, Queen of the Roses 8728, A. G. Soderberg; second, Cottered Princess, A. G. Soderberg.

Mare Over Three Years Old, Bred by Exhibitor—First, Cottered Princess, A. G. Soderberg; second, Osco Spinet 7084, A. G. Soderberg.

Mare Under Three Years Old, Bred by Exhibitor—First, ———— Finch Bros.; second, Cottered Princess, A. G. Soderberg.

Get of Stallion—First, Finch Bros.

Produce of Mare—First, A. G. Soderberg; second, R. B. Brown.

Grand Display—Four animals bred by exhibitor: First, Finch Bros.

PERCHERON AND FRENCH DRAFT.

EXHIBITORS.

Robert Burgess & Son, Wenona, Illinois; Cresap Bros., Altoona, Iowa; Crawford & Griffin, Newton, Iowa; H. C. Davis, Ames, Iowa; Loren Dunbar, Earlham, Iowa; Erickson & Patterson, Worthington, Minnesota; Finch Bros., Joliet and Verona, Illinois; S. B. Frey, Ames, Iowa; W. W. Garner, Des Moines, Iowa; Geo. W. Guthrie, Newton, Iowa; J. G. Hurst, Norwalk, Iowa; Leitch & Hathaway, Lafayette, Illinois; Lewis Bros. & Rickert, Marshalltown, Iowa; McLaughlin Bros., Columbus, Ohio; H. G. McMillan, Rock Rapids, Iowa; Maasdam & Wheeler, Fairfield, Iowa; W. H. Mason, Carlisle, Iowa; F. O. Nutting, Indianola, Iowa; Rhea Bros., Arlington, Nebraska; Singmaster Bros., Keota, Iowa; Trumans' Pioneer Stud Farm, Bushnell, Illinois; J. P. Wilson, Indianola, Iowa.

AWARDS.

JUDGE...............ALEX GALBRAITH, Janesville, Wisconsin.

Stallion Four Years Old and Over—First, Albert 42815, H. G. McMillan; second, Alger (58071), Singmaster Bros.; third, Banquet (58755), Robt. Burgess & Son; fifth, Arago (59553), Trumans' Pioneer Stud Farm; fifth, Guignol (57894) 50531, W. W. Garner; sixth, Carlo 41774, Rhea Bros.

Stallion Over Three Years and Under Four—First, Favori 47075 (63822), Singmaster Bros.; second, Santeur (62250), Robt. Burgess & Son; third, Reveur 47065 (63816), Singmaster Bros.; fourth, Serpolin 47074 (63378), Singmaster Bros.; fifth, Turcos 48449, Crawford & Griffin.

Stallion Over Two Years and Under Three—First, Loualaba 68247, Robt. Burgess & Son; second, Lyndon 50635, Robt. Burgess & Son; third, Maraicher (65504), Singmaster Bros.

Stallion Over One Year and Under Two—First, Helmar, Robt. Burgess & Son; second, Colonel Lapin 45474, Geo. W. Guthrie; third, Gadsden 46783, Patterson & Erickson.

Stallion Foal—First, Best 50666, Patterson & Erickson; second, Coco 2d, F. O. Nutting & Son; third, Altoona, H. C. Davis.

Stallion Over Three Years Old, Bred by Exhibitor—First, Toreador 46269, H. G. McMillan; second, Moneil 45590, S. B. Frey; third, Black Dandy 40772, F. O. Nutting & Son.

Stallion Under Three Years Old, Bred by Exhibitor—First, Lyndon 50635, Robt. Burgess & Son; second, King Midas 50651, H. G. McMillan; third, Charlatan 50652, H. G. McMillan; fourth, Keota Saul 49088, Singmaster Bros.

Mare Over Four Years Old—First, Victorine 31378, H. G. McMillan; second, Ukraine 46231 (46344), Singmaster Bros.; third, Ubrique 46232 (46347), Singmaster Bros.; fourth, Amy 19304, Patterson & Erickson.

Filly Over Three Years and Under Four—First, Coulisse 62284, Singmaster Bros.; second, D'Elda 41966, Patterson & Erickson; third, Bichette 46227 (62605), Singmaster Bros.

Filly Over Two Years and Under Three—First, Gaufrette (67534), Singmaster Bros.; second, Blondy 44086, Patterson & Erickson; third, Lady Delphine 46864, Robt. Burgess & Son.

Filly Over One Year and Under Two—First, Adelaide 50646, H. G. McMillan; second, Sybil 46789, Patterson & Erickson; third, Alma 50636, Robt. Burgess & Son.

Mare Foal—First, Myrtle Belle 49521, J. P. Wilson; second, ———— W. H. Mason; third, Jewel 50253, Cresap Bros.

Mare Over Three Years Old, Bred by Exhibitor—First, Victorine 31378, H. G. McMillan; second, Iolanthe 40925, H. G. McMillan; third, Cosette 41969, Patterson & Erickson; fourth, Uva 41972, Patterson & Erickson.

Mare Under Three Years Old, Bred by Exhibitor—First, Sarah 44079, Patterson & Erickson; second, Adelaide 50646, H. G. McMillan; third, Aima 50636, Robt. Burgess & Son; fourth, Beatrice 44070, Patterson & Erickson.

Get of Stallion—First, H. G. McMillan; second, H. G. McMillan; third, Patterson & Erickson.

Produce of Mare—First, H. G. McMillan; second, Robt. Burgess & Son; third, Crawford & Griffin.

Grand Display—Four animals bred by exhibitor: First, H. G. McMillan; second, H. G. McMillan; third, Patterson & Erickson.

SPECIAL CHAMPIONSHIPS—GOLD MEDAL—RESERVE RIBBON.

Offered by the Percheron Society of America.

Best American Bred Stallion, Any Age—First, Crawford & Griffin; second, Rhea Bros.

Best American Bred Mare, Any Age—First, H. G. McMillan; second, H. G. McMillan.

Champion Stallion—First, H. G. McMillan; second, Robt. Burgess & Son.

Champion Mare—H. G. McMillan.

Best Five Stallions—Robt. Burgess & Son.

Best Three Mares—H. G. McMillan.

Best Stallion and Four Mares, Any Age, Owned by Exhibitor—H. G. McMillan.

SPECIAL CHAMPIONSHIPS—GOLD MEDAL—RESERVE RIBBON.

Offered by the Percheron Registry Co.

Champion Group—Five or more animals belonging to one exhibitor: Robt. Burgess & Son.

BELGIAN.

EXHIBITORS.

Robt. Burgess & Son, Wenona, Illinois; Crawford & Griffin, Newton, Iowa; Finch Bros., Joliet and Verona, Illinois; W. W. Garner, Des Moines, Iowa; G. W. Grigsby, Sheldahl, Iowa; Henry Lefebure, Fairfax, Iowa; J. A. Loughridge, Delta, Iowa; Trumans' Pioneer Stud Farm, Bushnell, Illinois; C. E. Weston, Manning, Iowa.

AWARDS.

JUDGE.....................W. E. PRITCHARD, Ottawa, Illinois.

Stallion Four Years Old and Over—First, Robert De Scailmond 29576, Finch Bros.; second, Monte Carlo (30396), Henry Lefebure; third, Champagne Mecht (25514), C. E. Weston; fourth, Martin Duhazoir, G. W. Grigsby; fifth, Coco-de-Pousset (41848), Henry Lefebure; sixth, Sultan (37480), Robt. Burgess & Son.

Stallion Over Three Years and Under Four—First, Lingot d'Or (37466), Robt. Burgess & Son; second, Baron De Dender 37468, Finch Bros., third; Monaco-de-Thor (39692), Henry Lefebure; fourth, Prosit 2568, Crawford & Griffin; fifth, Bruno de Hubaumont (38490), Robt. Burgess & Son.

Stallion Over Two Years and Under Three—First, Caesar Crags 58367, Finch Bros.; second, Bizar 1994, Henry Lefebure.

Stallion Over One Year and Under Two—First, Geant de Rhode, Vol. 15, Henry Lefebure; second, Grenadier, Vol. 15, Henry Lefebure.

Stallion Foal—First, Lucifer, Henry Lefebure.

Stallion Under Three Years Old, Bred by Exhibitor—First, Bizar 1994, Henry Lefebure; second, Lucifer, Henry Lefebure.

Mare Over Four Years Old—First, Lisa de Wales 48781, Finch Bros.; second, Fauvette 118, Henry Lefebure; third, Tillyette 190, Henry Lefebure.

Filly Over Three Years and Under Four—First, Madam II. 55719, J. A. Loughridge.

Filly Over Two Years and Under Three—First, Piane, Henry Lefebure.

Filly Over One Year and Under Two—Rosetta, Vol. 15, Henry Lefebure; second, Follette, Henry Lefebure; third, Mirza, Vol. 15, Henry Lefebure.

Mare Foal—First, Mignonette, Henry Lefebure.

Mare Over Three Years Old, Bred by Exhibitor—First, Fauvette 118, Henry Lefebure; second, Tillyette 190, Henry Lefebure.

Mare Under Three Years Old, Bred by Exhibitor—First, Follette, Henry Lefebure; second, Mignonette, Henry Lefebure.

Get of Stallion—First, Finch Bros.

Produce of Mare—First, Henry Lefebure.

Grand Display—Four animals bred by exhibitor: First, Henry Lefebure.

DRAFT GELDINGS OR MARES.

EXHIBITORS.

Finch Bros., Joliet and Verona, Illinois; W. V. Hixson, Marengo, Iowa; J. A. Loughridge, Delta, Iowa; McLay Bros., Janesville, Wisconsin; H. G. McMillan, Rock Rapids, Iowa; F. O. Nutting, Indianola, Iowa; James Pedley, Algona, Iowa; J. T. Stratton, Collins, Iowa; Trumans' Pioneer Stud Farm, Bushnell, Illinois; J. P. Wilson, Indianola, Iowa.

AWARDS.

JUDGE........................R. B. OGILVIE, Chicago, Illinois.

Single Mare or Gelding Under 1,750 Pounds—First, McLay Bros.; second, James Pedley; third, Finch Bros.

Single Mare or Gelding Over 1,750 Pounds—First, McLay Bros.; second, Finch Bros.; third, Finch Bros.

Pair of Mares or Geldings Under 3,500 Pounds—First, Finch Bros.

Pair of Mares or Geldings Over 3,500 Pounds—First, Finch Bros.

Four-Horse Team—Finch Bros.

MULES.

EXHIBITORS.

H. L. Orcutt, Monroe, Iowa; F. F. Williams, Des Moines, Iowa.

Mule Four Years Old or Over—First, F. F. Williams.

Mule Two Years Old and Under Three—H. L. Orcutt.

Mine Mule, Fifteen Hands or Over—First, H. L. Orcutt; second, H. L. Orcutt.

Mule Any Age—H. L. Orcutt.

Pair of Mules Over 2,400 Pounds—F. F. Williams.

Pair of Mules Under 2,400 Pounds—H. L. Orcutt.

Pair of Mules, Any Age or Weight—F. F. Williams.

CATTLE DEPARTMENT.

SUPERINTENDENT........S. B. PACKARD, Marshalltown, Iowa.

SHORT-HORNS.

EXHIBITORS.

O. V. Battles, Maquoketa, Iowa; R. E. Baldwin, Osceola, Iowa; Bellows Bros., Maryville, Missouri; E. W. Bowen, Delphi, Indiana; G. H. Burge, Mount Vernon, Iowa; R. B. Brown, Newton, Iowa; Carpenter & Ross, Mansfield, Ohio; John Cresswell, Hillsboro, Iowa; C. W. Daws & Son, Harlan, Iowa; Elmendorf Farm, Lexington, Kentucky; F. A. Edwards, Webster City, Iowa; Ernest Funke, Greenfield, Iowa; Forest & Dunham, Miles, Iowa; Flynn Farm Co., Des Moines, Iowa; John Gedney & Son, Numa, Iowa; W. E. Graham, Prairie City, Iowa; A. F. Graves, King City, Missouri; F. W. Harding, Waukesha, Wisconsin; G. F. Hart, Summerfield, Kansas; Herr Bros. & Reynolds, Lodi, Wisconsin; J. T. Judge, Carroll, Iowa; R. W. Livingston, Monroe, Iowa; C. F. Mitchell & Son, Farragut, Iowa; H. D. Parsons, Newton, Iowa; G. E. Paul, Haverhill, Iowa; J. M. Pease & A. J. Pinck, Colfax, Iowa; H. Pritchard & Son, Avoca, Iowa; J. H. Richards, Batavia, Iowa; C. A. Saunders, Manilla, Iowa; Shadewell Stock Farm, Carthage, Missouri; John E. Smith, Laurel, Iowa; O. O. Smith, Des Moines, Iowa; Aug. Sonneland, Harlan, Iowa; T. K. Tomson & Sons, Dover, Kansas; M. A. Wagner, Fremont, Ohio; C. R. Warren, Glenwood, Iowa; R. E. Watts & Sons, Miles, Iowa; J. G. Westrope, Harlan, Iowa; G. H. Whitem, Emerson, Iowa; Miles Wilson, Numa, Iowa; T. J. Wornall & Sons, Liberty, Missouri; J. S. Zook & Son, Fontanelle, Iowa.

AWARDS.

JUDGE....................C. B. DUSTIN, Summer Hill, Illinois.

Bull Three Years Old or Over—First, Whitehall Marshall 209776, Elmendorf Farm; second, Good Choice 227852, Bellows Bros.; third, Whitehall King 222724, F. W. Harding; fourth, Scotch Mist 224249, Carpenter & Ross; fifth, Scottish Champion 224435, H. D. Parsons; sixth, Archer 205740, T. K. Tomson & Sons.

Bull Two Years Old and Under Three—First, Avondale 245144, Carpenter & Ross; second, Hopeful Knight 244229, G. H. Burge; third, Champion of Lyndale 265011, A. F. Graves; fourth, Banner's Victor 242584, C. R. Warren; fifth, Contractor Banner Bearer 250894, G. H. White; sixth, Mysie's Lancaster 250737, R. W. Livingston.

Senior Yearling Bull—First, Anoka Sultan 264212, F. W. Harding; second, Gondomar 253394, C. F. Mitchell & Son; third, Nonpareil Prince 262931, C. W. Daws & Son.

Junior Yearling Bull—First, Premier 280263, Flynn Farm Co.; second, Red Sultan 269243, F. W. Harding; third, Carless Conqueror 2d 265303, T. J. Wornall & Sons.

Senior Bull Calf—First, Marshall's Best 285233, F. W. Harding; second, Royal Kintore 281530, Herr Bros. & Reynolds; third, Temptation 285244, T. K. Tomson & Sons; fourth, Bruce 285232, F. W. Harding; fifth, Clear the Way 2d, J. T. Judge; sixth, Mario's Champion 278776, Elmendorf Farm.

Junior Bull Calf—First, Marshall Bold 285234, F. W. Harding; second, May King 280869, T. J. Wornall & Sons; third, Royal Archer 285243, T. K. Tomson & Sons.

Cow Three Years Old or Over—First, Cherry Lass, Vol. 60, T. K. Tomson & Sons; second, Anoka Broadhooks, F. W. Harding; third, Lovely of Grassmire, Elmendorf Farm; fourth, Helen of Troy, Herr Bros. & Reynolds; fifth, Sonerila 12th, C. A. Saunders; sixth, Fenimore Princess, F. A. Edwards.

Heifer Two Years Old and Under Three—First, Missie of Browndale 12th, F. W. Harding; second, Clara Belle, Vol. 64, Bellows Bros.; third, Browndale Julia, Carpenter & Ross; fourth, Grace, Vol. 66, T. K. Tomson & Sons; fifth, Sarah McCubbing, Vol. 64, Flynn Farm Co.; sixth, Lovely Belle, Elmendorf Farm.

Senior Yearling Heifer—First, Anoka Gloster 2d, F. W. Harding; second, Sinnissippi Rose 2d, Elmendorf Farm; third, Delightful, Vol. 68, T. K. Tomson & Sons; fourth, Victoria Countess, F. A. Edwards; fifth, Mina Princess 4th, Vol. 71, Carpenter & Ross; sixth, Sinnissippi Butterfly, Elmendorf Farm.

Junior Yearling Heifer—First, Rose O'Day, T. J. Wornall & Sons; second, Maid Marian, T. J. Wornall & Sons; third, Sweet D. of Gloster, Vol. 68, Carpenter & Ross; fourth, Ramsden Flower, F. W. Harding; fifth, Hampton's Queen Beauty 2d, Vol. 68, Bellows Bros.; sixth, Annagather, Vol. 68, Carpenter & Ross.

Senior Heifer Calf—First, Sultan's Athene 15141, F. W. Harding; second, Poppy Girl 15155, T. K. Tomson & Sons; third, Rosita, Elmendorf Farm; fourth, Christmas Lassie 15153, T. K. Tomson & Sons; fifth, Elmendorf Lassie, Elmendorf Farm; sixth, Merry Lady, Vol. 70, Bellows Bros.

Junior Heifer Calf—First, Princess Royal, Herr Bros. & Reynolds; second, Rosetta of Grassland 10019, T. J. Wornall; third, Lady Flora, Herr Bros. & Reynolds; fourth, Queenly Malaka, H. D. Parsons; fifth, Prudence, Elmendorf Farm; sixth, Bridesmaid, Elmendorf Farm.

Exhibitor's Herd—First, F. W. Harding; second, Elmendorf Farm; third, T. K. Tomson & Sons; fourth, Carpenter & Ross; fifth, Bellows Bros.

Breeder's Young Herd—First, F. W. Harding; second, Bellows Bros.; third, T. K. Tomson & Sons; fourth, Flynn Farm Co.; fifth, Herr Bros. & Reynolds.

Calf Herd—First, T. K. Tomson & Sons; second, F. W. Harding; third, Herr Bros. & Reynolds; fourth, H. D. Parsons; fifth, Flynn Farm Co.

Get of Sire—First, F. W. Harding; second, Bellows Bros ; third, T. K. Tomson & Sons; fourth, F. W. Harding; fifth, Bellows Bros.

Produce of Cow—First, Carpenter & Ross; second, F. W. Harding; third, T. J. Wornall & Sons; fourth, T. K. Tomson & Sons; fifth, Herr Bros. & Reynolds.

Senior Champion Bull—Whitehall Marshall 209776, Elmendorf Farm.

Junior Champion Bull—Premier 280263, Flynn Farm Co.

Senior Champion Cow—Missie of Browndale 12th, F. W. Harding.

Junior Champion Heifer—Rose O'Day, T. J. Wornall.

Grand Champion Bull—Whitehall Marshall 209776, Elmendorf Farm.

Grand Champion Female—Missie of Browndale 12th, F. W. Harding.

IOWA SPECIALS.

Bull Three Years Old or Over—First, Scottish Champion 224435, H. D. Parsons; second, Clear the Way 231482, J. T. Judge; third, Victor of Evergreen Park 4th 184631, John Gedney & Son; fourth, Secret Viscount 212705, F. A. Edwards; fifth, Silver Star 232024, R. B. Brown.

Bull Two Years Old and Under Three—First, Banner's Victor 242584, C. R. Warren; second, Contractor Banner Bearer 250894, G. H. White; third, Mysie's Lancaster 250737, R. W. Livingston.

Senior Yearling Bull—First, Nonpareil Prince 262931, C. W. Daws & Son; second, Gloster Marshall 263130, O. O. Smith; third, Hampton's Counsellor 264533, G. H. White; fourth, Prince Lavender, J. G. Westrope.

Junior Yearling Bull—First, See A Cumberland 267738; C. A. Saunders; second, Scottish President, 261716, J. M. Pease & A. J. Pinck; third, McDougal 282341, G. H. Burge.

Senior Bull Calf—First, Clear the Way 2d, J. T. Judge; second, Pinehurst Champion 285286, C. W. Daws & Son; third, Nonpareil Prince, Vol. 71, Flynn Farm Co.; fourth, King, C. A. Saunders; fifth, Jessie's Boy, J. G. Westrope.

.*Junior Bull Calf*—First, Prince F. 2d, Vol. 71, Flynn Farm Co.; second, Lovat Lad, H. D. Parsons; third, Scottish Clement, H. D. Parsons.

Cow Three Years Old or Over—First, Sonerila 12th, C. A. Saunders; second, Fenimore Princess, F. A. Edwards; third, Choice Blythsome, H. D. Parsons; fourth, Roan Princess, C. A. Saunders; fifth, Sapho, Vol. 47, Flynn Farm Co.

Heifer Two Years Old and Under Three—First, Sarah McCubbing, Vol. 64, Flynn Farm Co.; second, Fashion's Roan, Vol. 70, R. E. Watts & Son; third, Independence Lady 4th, C. A. Saunders; fourth, Pleasant Ridge Athene, F. A. Edwards; fifth, Daisy 2d, G. H. White.

Senior Yearling Heifer—First, Victoria Countess, F. A. Edwards; second, Poppy 7th, Vol. 70, Flynn Farm Co.; third, Rock Dale Duchess 2d, C. A. Saunders; fourth, Florella, Vol. 68, G. H. Burge; fifth, Sweet Violet 12136, R. E. Watts & Sons.

Junior Yearling Heifer—First, Dora 5th, H. D. Parsons; second, Miss Ida 6th, C. A. Saunders; third, Countess Cumberland, C. A. Saunders; fourth, Sweet Briar D., Vol. 70, Flynn Farm Co.

Senior Heifer Calf—First, Scottish Rose 12228, Forest & Dunham; second, Bernice, F. A. Edwards; third, Malaka's Marian, H. D. Parsons; fourth, Dainty Girl, H. D. Parsons; fifth, Janette's Beauty, Ernst Funke.

Junior Heifer Calf—First, Queenly Malaka, H. D. Parsons; second, Miss Ramsden 20th, Ernst Funke; third, Veronica 5th, J. T. Judge; fourth, Acacia 13th, Ernst Funke.

Exhibitor's Herd—First, H. D. Parsons; second, C. A. Saunders; third, G. H. Burge.

Breeder's Young Herd—First, Flynn Farm Co.; second, C. A. Saunders; third, H. D. Parsons.

Get of Sire—First, H. D. Parsons; second, C. A. Saunders; third, G. H. Burge.

Produce of Cow—First, H. D. Parsons; second, G. H. Burge; third, C. W. Daws & Son.

Senior Champion Bull—Scottish Champion 224435, H. D. Parsons.

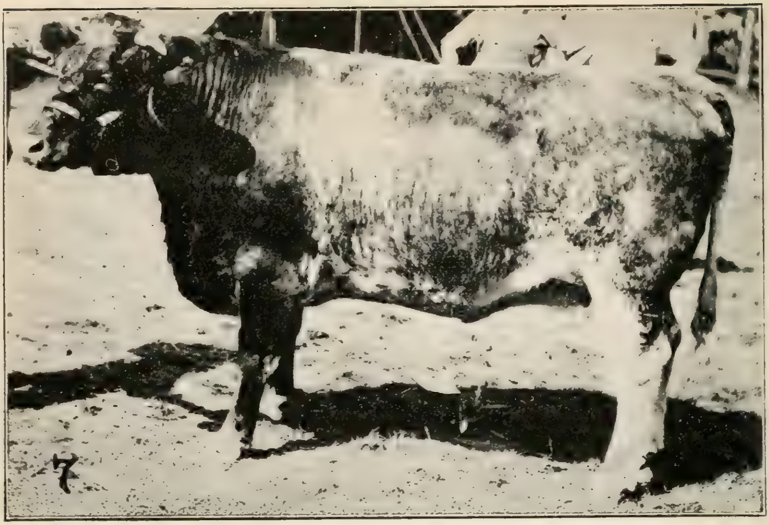
Junior Champion Bull—Clear the Way 2d, J. T. Judge.

Senior Champion Cow—Sonerila 12th, C. A. Saunders.

Junior Champion Heifer—Victoria Countess, F. A. Edwards.

Grand Champion Bull—Scottish Champion 224435, H. D. Parsons.

Grand Champion Female—Victoria Countess, F. A. Edwards.



Grand Champion Cow Victoria Countess in the Short Horns for Iowa cattle at the Iowa State Fair and Exposition 1907. Shown by F. A. Edwards, Webster City.

HEREFORD.

EXHIBITORS.

Ben Broughton, Lake View, Iowa; Cargill & McMillan, La Crosse, Wisconsin; Carrothers Bros., Ryan, Iowa; Dale & Wight, Pleasanton, Iowa; J. J. Early, Baring, Missouri; Jas. E. Logan, Kansas City, Missouri; W. S. Van Natta & Son, Fowler, Indiana; G. W. Way & Son, New Sharon, Iowa; Hugh Whiteford, Guilford, Missouri.

AWARDS.

JUDGE..........ANDREW BOSS, St. Anthony Park, Minnesota.

Bull Three Years Old or Over—First, Privateer 2d 182143, Cargill & McMillan; second, Sunny South 121189, J. J. Early; third, Dudley 176275, Ben Broughton; fourth, Beau Brummel 4th 194318, G. W. Way & Son; fifth, General Grove 137741, J. J. Early.

Bull Two Years Old and Under Three—First, Bonnie Brae 3d 203317, Cargill & McMillan; second, Prime Lad 9th 213963, W. S. VanNatta & Son; third, Preceptor 232358, Dale & Wight; fourth, Young Beau Brummel 207148, Jas. E. Logan.

Senior Yearling Bull—First, Bonnie Brae 6th 230547, Cargill & McMillan; second, Sunset King 228551, Jas. E. Logan; third, Beaumont Jr. 233039, Ben Broughton.

Junior Yearling Bull—First, Beau Brummel 13th 238389, G. W. Way & Son; second, Beau Brummel 10th 238386, G. W. Way & Son; third, Beau Brummel 9th 238385, G. W. Way & Son.

Senior Bull Calf—First, Princepts 11th 264204, Cargill & McMillan; second, Prime Lad 38th 261816, W. S. VanNatta & Son; third, Keystone

King 248135, Jas. E. Logan; fourth, March Lad 261699, W. S. VanNatta & Son; fifth, Zilcaade 260258, J. J. Early; sixth, Early Reaper, 260249, J. J. Early.

Junior Bull Calf—First, Castor 259475, Jas. E. Logan; second, Princepts 15th 268046, Cargill & McMillan; third, Bonnie Brae 12th 268042, Cargill & McMillan.

Cow Three Years Old or Over—First, Princess 197988, W. S. VanNatta & Son; second, Twilight 167464, Cargill & McMillan; third, Kiowa 163892, G. W. Way & Son; fourth, Hesiod Maiden 139853, J. J. Early; fifth, Dulci 189225, Ben Broughton; sixth, Nettie 1st 169808, J. J. Early.

Heifer Two Years Old or Under Three—First, Magnonette 209141, Cargill & McMillan; second, Pretty Face 207319, W. S. VanNatta & Son; third, Ethel 2d 203170, Cargill & McMillan; fourth, Linzette 2d, W. S. VanNatta & Son; fifth, Bright Countess 5th 254965, G. W. Way & Son; sixth, Lady Dudley 201821, Ben Broughton.

Senior Yearling Heifer—First, Miss Filler 2d 230514, Cargill & McMillan; second, Margaret 234336, W. S. VanNatta & Son; third, Mary Gertrude 219966, Jas. E. Logan; fourth, Laurie Lass 234334, W. S. VanNatta & Son; fifth, Bonny Lucy 6th 254964, G. W. Way & Son; sixth, Geneva 236958, Ben Broughton.

Junior Yearling Heifer—First, Miss Filler 5th 230517, Cargill & McMillan; second, Miss Filler 6th 239659, Cargill & McMillan; third, Lassie 234333, W. S. VanNatta & Son; fourth, Fredonia 231970, Jas. E. Logan; fifth, Beau Anna 238380, G. W. Way & Son; sixth, Kiowa 2d 238393, G. W. Way & Son.

Senior Heifer Calf—First, Princess 2d 264207, Cargill & McMillan; second, Princess 3d 264208, Cargill & McMillan; third, Leona 261811, W. S. Van Natta & Son; fourth, Miss Roseberry 251471, Jas. E. Logan; fifth, Princess 4th 264209, Cargill & McMillan; sixth, Sister Margaret 261817, W. S. VanNatta & Son.

Junior Heifer Calf—First, Princess 7th 267032, Cargill & McMillan; second, Susan 270994, W. S. VanNatta & Son; third, Princess 8th 267033, Cargill & McMillan; fourth, Jessica 259478, Jas. E. Logan; fifth, Sunny Maiden 268466, J. J. Early; sixth, Mirthful 270803, Ben Broughton.

Exhibitor's Herd—First, Cargill & McMillan; second, W. S. VanNatta & Son; third, G. W. Way & Son; fourth, Ben Broughton.

Breeder's Young Herd—First, Cargill & McMillan; second, W. S. VanNatta & Son; third, Jas. E. Logan; fourth, W. S. VanNatta & Son; fifth, G. W. Way & Son.

Calf Herd—First, Cargill & McMillan; second, W. S. VanNatta; third, Jas. E. Logan.

Get of Sire—First, W. S. VanNatta & Son; second, Jas. E. Logan; third, Cargill & McMillan; fourth, W. S. VanNatta & Son; fifth, J. J. Early.

Produce of Cow—First, Cargill & McMillan; second, W. S. VanNatta & Son; third, W. S. VanNatta & Son; fourth, Cargill & McMillan; fifth, Jas. E. Logan.

Champion Bull, Any Age—Cargill & McMillan.

Champion Cow, Any Age—Cargill & McMillan.

IOWA SPECIALS.

Bull Three Years Old or Over—First, Dudley 176275, Ben Broughton; second, Beau Brummel 4th 194318, G. W. Way & Son.

Bull Two Years Old and Under Three—First, Preceptor 232358, Dale & Wright.

Senior Yearling Bull—First, Beaumont, Jr. 233039, Ben Broughton.

Junior Yearling Bull—First, Beau Brummel 9th 238385, G. W. Way & Son.

Senior Bull Calf—First, Gem 265739, Ben Broughton; second, Vern 256742, Ben Broughton.

Junior Bull Calf—First, Iowa Brummel 268357, G. W. Way & Son.

Cow Three Years Old or Over—First, Kiowa 163892, G. W. Way & Son; second, Dulci 189225, Ben Broughton.

Heifer Two Years Old and Under Three—First, Bright Countess 5th 254965, G. W. Way & Son; second, Lady Dudley 201821, Ben Broughton.

Senior Yearling Heifer—First, Bonny Lucy 6th 254964, G. W. Way & Son; second, Geneva 236958, Ben Broughton; third, Dimples 236954, Ben Broughton.

Junior Yearling Heifer—First, Beau Anna 238380, G. W. Way & Son; second, Kiowa 2d 238393, G. W. Way & Son; third, Lady Audley 236960, Ben Broughton.

Senior Heifer Calf—First, Golden Leaf 4th 257494, G. W. Way & Son; second, Ruth Anna 4th 257495, G. W. Way & Son.

Junior Heifer Calf—First, Mirthful 270803, Ben Broughton; second, ———— Ben Broughton.

Exhibitor's Herd—First, G. W. Way & Son; second, Ben Broughton.

Breeder's Young Herd—First, G. W. Way & Son; second, Ben Broughton.

Get of Sire—First, G. W. Way & Son; second, Ben Broughton.

Produce of Cow—First, C. W. Way & Son; second, Ben Broughton.

Champion Bull, Any Age—Dudley 176275, Ben Broughton.

Champion Cow, Any Age—Kiowa 163892, G. W. Way & Son.

ABERDEEN-ANGUS.

EXHIBITORS.

O. V. Battles, Maquoketa, Iowa; A. C. Binnie, Alta, Iowa; Oliver Hammers, Malvern, Iowa; J. J. Hasbrouck, Humeston, Iowa; H. J. Hess. Waterloo, Iowa; Silas Igo, Palmyra, Iowa; Albert Lust, Monroe, Iowa; Geo. Lust, Monroe, Iowa; W. A. McHenry, Denison, Iowa; McDonald & Brantley, Princeton, Missouri; W. J. Miller, Newton, Iowa; Chas. J. Off, Peoria, Illinois; Rosenfeld & Severly, Kelley, Iowa; Wurzbacher & Merrit, Morley, Iowa.

AWARDS.

JUDGE........................W. J. KENNEDY, Ames, Iowa.

Bull Three Years Old or Over—First, Jim Delaney 62767, A. C. Binnie, second, McDonald's Las 66952, W. J. Miller.

Bull Two Years Old and Under Three—First, Glenfoil Thickset 2nd 88142, O. V. Battles; second, Woodlawn Elfin 90063, Silas Igo; third, Star of Denison 82426; W. A. McHenry; fourth, Lord Ellemere 84115, Wurzbacher & Merrit; fifth, Eglamour of Quietdale 82111, H. J. Hess; sixth, King McDonald 80599, W. J. Miller.

Senior Yearling Bull—First, Golden Gleam 93256, O. V. Battles; second, Prince Pico 93306, W. A. McHenry.

Junior Yearling Bull—First, Dalgarno 94796, H. J. Hess; second, Blackbird Barney 93324, W. A. McHenry; third, Bonnie Ben Royal 95006, A. C. Binnie.

Senior Bull Calf—First, Autocrat 104127, W. A. McHenry; second, Black King of Homedale 2d 104254, Silas Igo; third, Royal Barbara, A. C. Binnie; fourth, Sir Blackwood 105816, Oliver Hammers; fifth, Idealist 106034, J. J. Hasbrouck; sixth, Sir Novice 2d, W. J. Miller.

Junior Bull Calf—First, Laird Ellemere, A. C. Binnie; second, Peter Pan, Rosenfeld & Siverly; third, Ogarita's Prince, McDonald & Brantley.

Cow Three Years Old or Over—First, Glenfoil Rose 63489, W. A. McHenry; second, Eileen Lass 73102, O. V. Battles; third, Snowflake 2d of Kirkbridge 64016, W. J. Miller; fourth, Mina of Alta 5th 73111, A. C. Binnie; fifth, Gussie of Kirkbridge 64008, W. J. Miller; sixth, Pride of Fashion 68592, H. J. Hess.

Heifer Two Years Old and Under Three—First, Glenfoil Queen 2d 88143, O. V. Battles; second, Abbess McHenry 6th 82419, W. A. McHenry; third, Home View Lady Idessa 2d 68247, H. J. Hess; fourth, Blackbird Lassie of Alta 83368, A. C. Binnie; fifth, Pride McHenry 45th 82421, W. A. McHenry; sixth, Queen of Cherokee 10th 83078, W. J. Miller.

Senior Yearling Heifer—First, Pride McHenry 53d 93305, W. A. McHenry; second, Gaylawn Bonnie Lass 100608, O. V. Battles; third, Enna Lassie 2d 90052, A. C. Binnie; fourth, Coquette Lass of Alta 95003, A. C. Binnie; fifth, Queen of Hillhurst 92910, McDonald & Brantley; sixth, Duchess 3d of Mt. Vernon 96652, Oliver Hammers.

Junior Yearling Heifer—First, Queen Lass of Alta 3d 95007, A. C. Binnie; second, Blackbird Lady 4th 95005, O. V. Battles; third, Blackbird McHenry 66th 93314, W. A. McHenry; fourth, Home Dale Erica 3d 98818, Silas Igo; fifth, Snowflake's Queen 94354, W. J. Miller; sixth, Black Darling C. 96123, O. V. Battles.

Senior Heifer Calf—First, Brookside Quality Queen 2d 102335, O. V. Battles; second, Eza Lass, A. C. Binnie; third, Blackbird McHenry 67th 104119, W. A. McHenry; fourth, Queen 11th of Mount Vernon 105812, Oliver Hammers; fifth, Queen 12th of Mount Vernon 105814; sixth, Premier Queen, McDonald & Brantley.

Junior Heifer Calf—First, Blackbird of Quietdale 6th 105554, H. J. Hess; second, Pride McHenry 62d 104113, W. A. McHenry; third, Esthonia of Alta, A. C. Binnie; fourth, Snowflake's Queen 2d, W. J. Miller; fifth, Blackbird 5th of Alta, A. C. Binnie; sixth, Metz Erica, W. J. Miller.

Exhibitor's Herd—First, O. V. Battles; second, A. C. Binnie; third, W. A. McHenry; fourth, W. J. Miller; fifth, H. J. Hess; sixth, W. J. Miller.

Breeder's Young Herd—First, W. A. McHenry; second, A. C. Binnie; third, H. J. Hess; fourth, W. J. Miller; fifth, Oliver Hammers; sixth, McDonald & Brantley.

Calf Herd—First, A. C. Binnie; second, W. J. Miller; third, Oliver Hammers.

Get of Sire—First, A. C. Binnie; second, Silas Igo; third, W. A. McHenry; fourth, W. J. Miller; fifth, O. V. Battles.

Produce of Cow—First, A. C. Binnie; second, W. A. McHenry; third, W. A. McHenry; fourth, A. C. Binnie; fifth, O. V. Battles; sixth, W. J. Miller.

Champion Bull, Any Age—Glenfoil Thickset 2d 88142, O. V. Battles.

Champion Cow, Any Age—Queen Lass of Alta 3d 95007, A. C. Binnie.

GALLOWAY.

EXHIBITORS.

A. G. Abney, North Loup, Nebraska; J. E. Bales & Son, Stockport, Iowa; A. F. Craymer, Morris, Illinois; C. S. Hechtner, Princeton, Illinois; G. W. Lindsey, Red Cloud, Nebraska.

AWARDS.

JUDGE..................A. M. THOMPSON, Nashua, Missouri.

Bull Three Years Old or Over—First, Scottish Samson 23542, A. F. Craymer; second, Wild's McDougal 24673, J. E. Bales & Son.

Bull Two Years Old and Under Three—First, Standard Favorite 25550, C. S. Hechtner; second, Sioux of Graybill 30276, G. W. Lindsay; third, Ned of Red Cloud 26253, A. G. Abney.

Bull One Year Old and Under Two—First, Dorothea's Prince 28813; second, Maple's Favorite 29045, C. S. Hechtner; third, Graham 5th 28885, C. S. Hechtner; fourth, Osage Chief 29576, G. W. Lindsay; fifth, Hardy Jim 29793, A. G. Abney; sixth, Gaudee of Rivers 28774, A. F. Craymer.

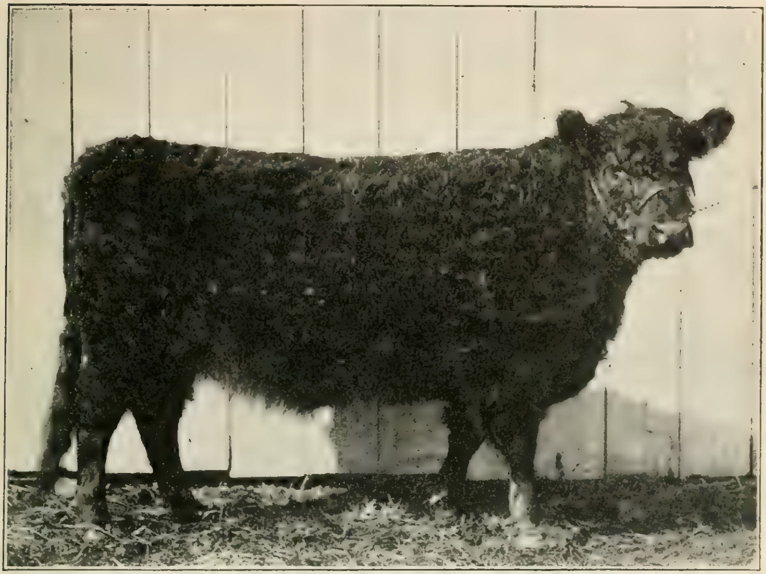
Senior Bull Calf—First, Observer of Red Cloud 30518, G. W. Lindsay; second, Fitz-James of Rivers 30637, A. F. Craymer; third, Roderick of Rivers 30638; fourth, Earl of Maples 30656, C. S. Hechtner.

Junior Bull Calf—First, Canty Lad 2d, J. E. Bales & Son; second, Pride, G. W. Lindsay; third, Duke of North Loup 30599, A. G. Abney.

Cow Three Years Old or Over—First, Lady Charlotte 24814, G. W. Lindsay; second, Myrtle of Avondale 24942, C. S. Hechtner; third, Evaline 2d of Avondale 20124, A. F. Craymer; fourth, Favorite 16th of Lockinkit 21205, G. W. Lindsay; fifth, Graceful 3d of Garliestown 19297, J. E. Bales & Son; sixth, Jessie A. 21918, A. G. Abney.

Heifer Two Years Old and Under Three—First, Druid's Lelia 26218, C. S. Hechtner; second, Hawkeye Lady 27121, J. E. Bales & Son; third, Standard's Pet 27190, A. F. Craymer; fourth, Mischief of Rivers 27191, A. F. Craymer; fifth, Appointee 30181, G. W. Lindsay; sixth, Tillie Bell 6th 28177, A. G. Abney.

Senior Yearling Heifer—First, Druid's Lelia 2d 29214, C. S. Hechtner; second, Annie Davids 5th 28780, J. E. Bales & Son; third, Vinola 3d of Maples 28855, C. S. Hechtner; fourth, Darletta of Rivers 28762, A. F. Craymer.



First prize junior yearling Galloway heifer, "Lady Graceful," Iowa State Fair and Exposition 1907, shown by J. E. Bales & Son.

Junior Yearling Heifer—First, Lady Graceful 28783, J. E. Bales & Son; second, Cora of Maples 30642, C. S. Hechtner; third, Princess Graceful 28781, J. E. Bales & Son; fourth, Defender's Pet 28761, A. F. Craymer; fifth, Lady Elgin 28843, G. W. Lindsay; sixth, Orcela, G. W. Lindsay.

Senior Heifer Calf—First, Vala, J. E. Bales & Son; second, Vada, J. E. Bales & Son; third, Orlinda 29384, G. W. Lindsay; fourth, Careful of Maples 28856, C. S. Hechtner; fifth, Olive 2d 29395, G. W. Lindsay; sixth, Orange Blossom 29394, G. W. Lindsay.

Junior Heifer Calf—First, Eva of Maples 30644, C. S. Hechtner; second, Lily May, J. E. Bales; third, Grace of Rivers 30635, A. F. Craymer; fourth, Lily Gay, J. E. Bales & Son; fifth, Pride of the Valley, G. W. Lindsay.

Exhibitor's Herd—First, C. S. Hechtner; second, J. E. Bales & Son; third, A. F. Craymer; fourth, G. W. Lindsay.

Breeder's Young Herd—First, C. S. Hechtner; second, J. E. Bales & Son; third, G. W. Lindsay; fourth, A. F. Craymer.

Calf Herd—First, J. E. Bales & Son; second, G. W. Lindsay; third, A. F. Craymer.

Get of Sire—First, C. S. Hechtner; second, J. E. Bales & Son; third, G. W. Lindsay; fourth, J. E. Bales & Son; fifth, A. F. Craymer.

Produce of Cow—First, C. S. Hechtner; second, J. E. Bales & Son; third, J. E. Bales & Son; fourth, A. F. Craymer; fifth, G. W. Lindsay.

Champion Bull, Any Age—Scottish Samson 23542, A. F. Craymer.

Champion Cow, Any Age—Lady Charlotte 24814, G. W. Lindsay.

RED POLLED.

EXHIBITORS.

Frank J. Clouss, Clare, Iowa; Chas. Graff, Bancroft, Nebraska; W. S. Hill, Alexandria, South Dakota; B. A. Samuelson, Kiron, Iowa.

AWARDS.

JUDGE..........JAMES W. WILSON, Brookings, South Dakota.

Bull Three Years Old or Over—First, One Price 8522, Chas. Graff; second, Jeff 9400, Frank J. Clouss.

Bull Two Years Old and Under—First, Nelson 14070, W. S. Hill; second, Logan 13500, Frank J. Clouss.

LOGAN No 13500.

Red Polled Bull exhibited at Iowa State Fair and Exposition 1907, by Frank J. Closs, Clare, Iowa.

Bull One Year Old and Under Two—First, Ivanhoe 14372, W. S. Hill; second, Improver 15961, B. A. Samuelson; third, Dexter 16225, Chas. Graff; fourth, Dorsey 15694, W. S. Hill; fifth, Bart 15880, Frank J. Clouss; sixth, Ben 15881, Frank J. Clouss.

Bull Calf Under One Year—First, Burke 16055, W. S. Hill; second, Oscar 16658, B. A. Samuelson; third, Lyman 16054, W. S. Hill; fourth, Joe 15065, B. A. Samuelson; fifth, Victor, Vol. 20, B. A. Samuelson; sixth, Roby's Sport 16649, Frank J. Clouss.

Cow Three Years Old or Over—First, Daisy Princess 13369, W. S. Hill; second, Ruperta 18993, Chas. Graff; third, Ruberta 22307, Chas. Graff; fourth, Moppet 18692, W. S. Hill; fifth, Saucy 14234, Frank J. Clouss; sixth, Cresco Ray 5th 23459, Frank J. Clouss.

Heifer Two Years Old and Under Three—First, Inez 23477, W. S. Hill; second, Lucy 24979, Frank J. Clouss; third, Doretha 23517, Frank J. Clouss; fourth, Garnet 23475, W. S. Hill; fifth, Floss 24527, Chas. Graff; sixth, Molly 25394, Chas. Graff.

Heifer One Year Old and Under Two—First, Sula 26261, W. S. Hill; second, Buttercup 24686, W. S. Hill; third, Inas 25786, Chas. Graff; fourth, Fanny 27075, Chas. Graff; fifth, Darling 24967, Frank J. Clouss; sixth, Mandeline 24971, Frank J. Clouss.

Heifer Calf Under One Year—First, Rosalind 26262, W. S. Hill; second, Queen 26613, B. A. Samuelson; third, Miss Saucy 26676, Frank J. Clouss; fourth, Ina 26250, W. S. Hill; fifth, Faydora 2d, Chas. Graff; sixth, Grace 26686, Frank J. Clouss.

Exhibitor's Herd—First, W. S. Hill; second, Chas. Graff; third, Frank J. Clouss; fourth, Frank J. Clouss.

Breeder's Young Herd—First, W. S. Hill; second, B. A. Samuelson.

Get of Sire—First, Frank J. Clouss; second, W. S. Hill; third, B. A. Samuelson; fourth, Chas. Graff; fifth, B. A. Samuelson.

Produce of Cow—First, W. S. Hill; second, W. S. Hill; third, W. S. Hill; fourth, Chas. Graff; fifth, B. A. Samuelson.

Champion Bull, Any Age—One Price 8522, Chas. Graff.

Champion Cow, Any Age—Inez 23477, W. S. Hill.

POLLED DURHAM.

EXHIBITORS.

L. S. Huntley, Chariton, Iowa; J. H. Jenning, Streator, Illinois; Wm. Smiley, Albany, Wisconsin; Shaver & Deuker, Kalona, Iowa; David Weatherby, Denison, Iowa; Jas. Wilson & Sons, Avoca, Iowa.

AWARDS.

JUDGE........................E. T. DAVIS, Iowa City, Iowa.

Bull Three Years Old or Over—First, Roan Hero 3613, Shaver & Deuker; second, Marshal of Orange 2758, James Wilson & Sons; third, Carrie's Son 2241, L. S. Huntley.

Bull Two Years Old and Under Three—First, Young Fairbanks 5274, David Weatherby; second, Champion of Iowa 4739, James Wilson & Sons; third, John D. 5273, David Weatherby.

Bull One Year Old and Under Two—First, Iowa Chief 5721, James Wilson & Sons; second, Orange Boy 5105, James Wilson & Sons; third, Amity Bence 5879, L. S. Huntley.

Bull Calf Under One Year—First, Lord Brant 5749, James Wilson & Sons; second, Oscar, Shaver & Deuker; third, Amity Major 5881, L. S. Huntley.

Cow Three Years Old or Over—First, Royal Flora, Vol. 3, Shaver & Deuker; second, Brunett's Birdie, Vol. 4, L. S. Huntley; third, Vellum 41st, Vol. 4, James Wilson & Sons.

Heifer Two Years Old and Under Three—First, Scottish Belle 4th, Vol. 4, Shaver & Deuker; second, Strathearn Queen 62d, Vol. 4, James Wilson & Sons; third, Guyola, Vol. 4, L. S. Huntley.

Heifer One Year Old and Under Two—First, Royal Queen, Vol. 4, Shaver & Deuker; second, Lily Brant 68th, Vol. 4, James Wilson & Sons; Maryland Queen, David Weatherby.

Heifer Calf Under One Year—First, Victoria 89, Vol. 4, James Wilson & Sons; second, Scotch Belle 5th, Vol. 4, Shaver & Deuker; third, Butterfly 82d, Vol. 4, James Wilson & Sons.

Exhibitor's Herd—First, Shaver & Deuker; second, James Wilson & Sons; third, Wm. Smiley.

Breeder's Young Herd—First, James Wilson & Sons; second, Wm. Smiley.

Get of Sire—First, James Wilson & Sons; second, L. S. Huntley; third, Wm. Smiley.

Produce of Cow—First, James Wilson & Sons; second, James Wilson & Sons; third, Shaver & Deuker.

Champion Bull, Any Age—Roan Hero 3613, Shaver & Deuker.

Champion Cow, Any Age—Royal Flora, Vol. 3, Shaver & Deuker.

HOLSTEIN.

EXHIBITORS.

W. B. Barney & Co., Hampton, Iowa; C. F. Stone, Peabody, Kansas; August Winter, Boyden, Iowa.

AWARDS.

JUDGE................F. H. SCRIBNER, Rosendale, Wisconsin.

Bull Three Years Old or Over—First, Jewel of Home Farm 24340, W. B. Barney & Co.; second, Ethel's Alexander 2d, Sir Netherland 26423, C. F. Stone

Bull Two Years Old and Under Three—First, Captain Wayne 40453, W. B. Barney & Co.; second, Empress Laddie 2d 38529, August Winter.

Bull One Year Old and Under Two—First, Karel Netherland De Kol 41760, C. F. Stone; second, Wit Gem Colantha, W. B. Barney & Co.

Bull Calf Under One Year—First, Sir Colantha Gem 46947, W. B. Barney & Co.; second, De Kol Paul Empress 47367, August Winter; third, Henry Empress Laddie 47366, August Winter.

Cow Three Years Old or Over—First, Parthenea Hengerveld 46004, W. B. Barney & Co.; second, Queen Josephine Mechtchilde 48655, C. F. Stone; third, Lady Truth, C. F. Stone; fourth, Colantha's Florence Herbert 5th C1231, W. B. Barney & Co.; fifth, Wayne Lady Mechtchilde 52790, C. F. Stone

Heifer Two Years Old and Under Three—First, Empress Gerben of Home Farm 3d 79243, W. B. Barney & Co.; second, Josephine Gerben De Kol Wartena 78622, C. F. Stone; third, Tinnie De Kol 79198, August Winter; fourth, Sophia Elgin 83444, August Winter; fifth, Magaretha Friedericke De Kol, August Winter.

Heifer One Year Old and Under Two (In Milk)—First, Sissy Baker Netherland 94909, C. F. Stone; second, Lady Myrtle De Kol 86698, W. B. Barney & Co.; third, Josephine Gerben Netherland 88432, C. F. Stone.

Heifer One Year Old and Under Two (Dry)—First, Melva 4th's Tritornia 2d 89802, W. B. Barney & Co.; second, Princess Netherland Colantha 89564, W. B. Barney & Co.; third, Lily Henry De Kol, August Winter; fourth, Snowflock Netherland 89483, August Winter.

Heifer Calf Under One Year—First, Wit Duchess Abekirk, W. B. Barney & Co.; second, Shadybrook Lady Parthenea Henry 95632, C. F. Stone; third, Lady Truth's Gerben Alexander 95630, C. F. Stone; fourth, Empress Duchess Gem 94512, W. B. Barney & Co.; fifth, Wayne Lady of Rosedale 95631, C. F. Stone.

Exhibitor's Herd—First, W. B. Barney & Co.; second, C. F. Stone; third, August Winter.

Breeder's Young Herd—First, W. B. Barney & Co.; second, C. F. Stone; third, August Winter.

Get of Sire—First, W. B. Barney & Co.; second, W. B. Barney & Co.; third, C. F. Stone; fourth, August Winter; fifth, August Winter.

Produce of Cow—First, C. F. Stone; second, W. B. Barney & Co.; third, C. F. Stone; fourth, August Winter; fifth, August Winter.

Champion Bull, Any Age—Jewel of Home Farm 24340, W. B. Barney & Co.

Champion Cow, Any Age—Parthenea Hengerveld 46004, W. B. Barney & Co.

JERSEY.

EXHIBITORS.

Dixon & Deaner, Brandon, Wisconsin; Hunkydory Farm, Pella, Iowa; Hunter & Smith, Beatrice, Nebraska; Mrs. S. B. Thomas, St. Joseph, Missouri.

AWARDS.

JUDGE................F. H. SCRIBNER, Rosendale, Wisconsin.

Bull Three Years Old or Over—First, Emanon 52299, Hunter & Smith; second, Zelay's Fancy Lad 65883, Dixon & Deaner; third, Gold Link's Gold Boy 61897, Mrs. S. B. Thomas; fourth, Vic's Successor 68163, Hunter & Smith; fifth, Hunkydory King 73399, Hunkydory Farm.

Bull Two Years Old and Under Three—First, Catillion's Bachelor 73836, Hunter & Smith.

Bull One Year Old and Under Two—First, Guenon's Champion Lad 73959, Hunter & Smith; second, Gorgeous' Uncle Peter, Mrs. S. B. Thomas; third, Coin Harvey, Hunkydory Farm.

Bull Calf Under One Year—First, Uncle Peter's Successor 77042, Mrs. S. B. Thomas; second, Golden Reverie's Lad, Dixon & Deaner; third, St. Paul, Dixon & Deaner; fourth, Libbie's Golden Lad, Dixon & Deaner; fifth, Victoria's Central Lad, Hunter & Smith.

Cow Three Years Old or Over—First, Morey's Golden Lass 168471, Dixon & Deaner; second, Sultan's Wonder Imp. 168524, Hunter & Smith; third, Uncle Peter's Fawn 181811, Mrs. S. B. Thomas; fourth, Georgeous' Nigretta 177201, Mrs. S. B. Thomas; fifth, Beechfield's Francis 192138, Dixon & Deaner.

Heifer Two Years Old and Under Three—First, Uncle Peter's Primrose 190607, Mrs. S. B. Thomas; second, Uncle Peter's Belle 190608, Mrs. S. B. Thomas; third, Sultan's Lady Wonder 199588, Hunter & Smith; fourth, Lorena Golden Lady 199581, Dixon & Deaner; fifth, Fox's Antoinette 186799, Hunkydory Farm.

Heifer One Year Old and Under Two (In Milk)—First, Victoria's Fair Lady, Hunter & Smith; second, Uncle Peter's Elfin, Mrs. S. B. Thomas; third, Victoria's Gem of St. Lambert 207505, Hunter & Smith; fourth, Silver Coo 198362, Hunkydory Farm.

Heifer One Year Old and Under Two (Dry)—First, Frinklin's Golden Beauty, Dixon & Deaner; second, Uncle Peter's Carnation 207955, Mrs. S. B. Thomas; third, Fancy Brier 2d, Hunter & Smith; fourth, Linda's Golden Lady 199196, Dixon & Deaner; fifth, Mary Belinda 208251, Hunkydory Farm.

Heifer Calf Under One Year—First, Brandon Pet, Dixon & Deaner; second, Uncle Peter's Blue Belle 207957, Mrs. S. B. Thomas; third, Gold Boy's Goldstream 207956, Mrs. S. B. Thomas; fourth, Victoria's Vera Vexer, Hunter & Smith; fifth, Emanon's Love, Hunter & Smith.

Exhibitor's Herd—First, Dixon & Deaner; second, Hunter & Smith; third, Mrs. S. B. Thomas; fourth, Hunkydory Farm.

Breeder's Young Herd—First, Hunter & Smith; second, Mrs. S. B. Thomas; third, Dixon & Deaner; fourth, Hunkydory Farm.

Get of Sire—First, Mrs. S. B. Thomas; second, Hunter & Smith; third, Mrs. S. B. Thomas; fourth, Dixon & Deaner.

Produce of Cow—First, Mrs. S. B. Thomas; second, Dixon & Deaner; third, Mrs. S. B. Thomas; fourth, Hunter & Smith; fifth, Dixon & Deaner.

Champion Bull, Any Age—Guenon's Champion Lad 73959, Hunter & Smith.

Champion Cow, Any Age—Morey's Golden Lass 168471, Dixon & Deaner.

TEST OF MILCH COWS.

EXHIBITORS.

C. F. Stone, Peabody, Kansas; W. B. Barney & Co., Hampton, Iowa; Dixon & Deaner, Brandon, Wisconsin; August Winter, Boyden, Iowa.

AWARDS.

JUDGE........................H. G. VANPELT, Ames, Iowa.

Test of Milch Cows—First, Nellie Elgin 62189, August Winter; second, Parthenea Hengerveld 46004, W. B. Barney & Co.; third, Mary Choraline Mercedes 50380, August Winter.

Name of Cow and Owner	Pounds milk	Butter fat	Butter fat	Butter at 25c per pound	Pounds skim milk	Skim milk at 20c per cwt.	Value of produce
Nellie Elgin 62189, August Winter, Boyden, Iowa	112	2.8	3.18	$.795	108.8	.218	$1.013
Parthenia Hengerveld 46004, W. B. Barney Co., Hampton, Iowa	110	3.0	3.038	.7595	106.96	.214	.974
Mary Choraline Mercedes 50308, August Winter, Boyden, Iowa	110.5	2.7	2.984	.746	107.52	.215	.955
Lady Truth Gerben Mathilda, C. F. Stone, Peabody, Kansas	100	3.0	2.99	.747	97.01	.194	.941
Lizetta DeKol 74154, August Winter, Boyden, Iowa	102	2.7	2.727	.682	99.27	.198	.881
Marge Elgin 67677, August Winter, Boyden, Iowa	94.2	2.93	2.755	.689	91.44	.183	.872
Queen Josephine Mechthilde 48655, C. F. Stone, Peabody, Kansas	81.6	3.23	2.62	.655	78.98	.158	.814
Colantha Florence Herbert 5th 61231, W. B. Barney Co., Hampton, Iowa	78.6	2.8	2.17	.543	76.47	.153	.695

Hugh G. Van Pelt, Director of Test.

FAT CATTLE—SHORT-HORNS.

EXHIBITORS.

J. R. Peak & Son, Winchester, Illinois; C. A. Saunders, Manilla, Iowa; Shadewell Stock Farm, Carthage, Missouri; Elmendorf Farm, Lexington, Kentucky.

AWARDS.

Judge..................C. B. Dustin, Summer Hill, Illinois.

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, First, John Peter, J. R. Peak & Son; second, George P., C. A. Saunders; third, Line of Scott, J. R. Peak.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Look Me Over, C. A. Saunders; second, Bob Winkle, J. R. Peak & Son; third, Frank Beesure, J. R. Peak & Son.

Steer, Spayed or Martin Heifer, Under One Year—First, Look at Me, C. A. Saunders; second, Kentucky Cardinal, Elmendorf Farm; third, Brilliancy, Elmendorf Farm.

Champion Steer, Spayed or Martin Heifer—Look Me Over, C. A. Saunders.

Champion Group of Three Head Owned by One Exhibitor—First, C. A. Saunders; second, J. R. Peak & Son; third, J. R. Peak & Son.

FAT CATTLE—HEREFORDS.

EXHIBITORS.

Cargill & McMillan, LaCrosse, Wisconsin.

AWARDS.

Judge..........Andrew Boss, St. Anthony Park, Minnesota.

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Fair Lad 1st 203171, Cargill & McMillan.

Steer, Spayed or Martin Heifer One Year and Under Two—Fulfiller 6th 230511, Cargill & McMillan.

Steer, Spayed or Martin Heifer Under One Year—First, Pioneer 256688, Cargill & McMillan.

Champion Steer, Spayed or Martin Heifer—Fair Lad 1st 203171, Cargill & McMillan.

Champion Group of Three Head Owned by Exhibitor—First, Cargill & McMillan.

FAT CATTLE—ABERDEEN ANGUS.

EXHIBITORS.

Silas Igo, Palmyra, Iowa; W. J. Miller, Newton, Iowa; Chas. J. Off, Peoria, Illinois; Rosenfeld & Siverly, Kelly, Iowa.

AWARDS.

JUDGE........................W. J. KENNEDY, Ames, Iowa.

Steer, Spayed or Martin Heifer Two Years and Under Three—First, South Oaks Chance 1383, W. J. Miller.

Steer, Spayed or Martin Heifer One Year and Under Two—First, Rollicker 1473, Rosenfeld & Siverly; second, Metz Prince 2d 1450, W. J. Miller; third, Home Dale Defender, Silas Igo.

Steer, Spayed or Martin Heifer Under One Year—First, Metz Prince 3d, W. J. Miller.

Champion Steer, Spayed or Martin Heifer—Rollicker 1473, Rosenfeld & Siverly.

Champion Group of Three Head Owned by Exhibitor—W. J. Miller.

FAT CATTLE—GALLOWAYS.

EXHIBITORS.

G. W. Lindsey, Red Cloud, Nebraska; C. D. McPherson, Fairfield, Iowa.

AWARDS.

JUDGE....................................A. M. THOMPSON.

Steer, Spayed or Martin Heifer Two Years and Under Three—First, Buster Brown 27244, C. D. McPherson.

Steer, Spayed or Martin Heifer One Year and Under Two—First, Red Cloud Chief, G. W. Lindsay.

Champion Steer, Spayed or Martin Heifer—Red Cloud Chief, G. W. Lindsay.

FAT CATTLE—GRADES AND CROSS BREEDS.

EXHIBITORS.

A. G. Abney, North Loup, Nebraska; Cargill & McMillan, LaCrosse, Wisconsin; Carrothers Bros., Ryan, Iowa; Door & Redhead, Des Moines, Iowa; Silas Igo, Palmyra, Iowa; W. J. Miller, Newton, Iowa; J. R. Peak

& Son, Winchester, Illinois; C. A. Saunders, Manilla, Iowa; David Weatherby, Denison, Iowa.

AWARDS.

JUDGES............. { W. J. RUTHERFORD, Winnipeg, Canada.
C. B. DUSTIN, Summer Hill, Illinois.

Steer, Spayed or Martin Heifer Two Years and Under Three—First, Joker, J. R. Peak & Son; second, Sunshine 2d, Silas Igo; third, John, C. A. Saunders; fourth, Wild Tom, W. J. Miller; fifth, White Foot, A. G. Abney.

Steer, Spayed or Martin Heifer One Year and Under Two—First, Robin J. R. Peak & Son; second, Bonnie, Cargill & McMillan; third, Ike, C. A. Saunders.

Steer, Spayed or Martin Heifer Under One Year—First, My Choice, Silas Igo; second, Metz Joe, W. J. Miller; third, My Surprise, J. B. Peak & Son.

Champion Steer, Spayed or Martin Heiger—First, My Choice, Silas Igo.

Champion Group of Three Owned by One Exhibitor—First, J. R. Peak & Son; second, Silas Igo; third, C. A. Saunders.

FAT CATTLE—GRAND CHAMPION.

EXHIBITORS.

Cargill & McMillan, LaCrosse, Wisconsin; Silas Igo, Palmyra, Iowa; G. W. Lindsey, Red Cloud, Nebraska; Rosenfeld & Siverly, Kelly, Iowa; C. A. Saunders, Manilla, Iowa.

AWARDS.

JUDGES...

W. J. RUTHERFORD, Winnipeg, Canada.

C. B. DUSTIN, Summer Hill, Illinois.

Steer, spayed or Martin heifer, any age or breed, limited to sweepstakes or champion steers, spayed or Martin heifers winning in pure bred Short-horn, Hereford, Aberdeen-Angus, Galloway and the grade and cross-bred sections. Fair Lad 1st 203171, Cargill & McMillan.

FAT CATTLE—GRAND CHAMPION GROUP.

EXHIBITORS.

Cargill & McMillan, LaCrosse, Wisconsin; J. R. Peak & Son, Winchester, Illinois; C. A. Saunders, Manilla, Iowa.

AWARDS.

JUDGES............. { W. J. RUTHERFORD, Winnipeg, Canada.
C. B. DUSTIN, Summer Hill, Illinois.

Grand champion group of three steers, spayed or Martin heifers, consisting of one steer, spayed or Martin heifer two years and under three, one one year and under two, and one under one year, owned by one exhibitor. Competition limited to the champion groups in Short-horns, Hereford, Aberdeen-Angus, Galloway and grade and cross-bred sections. Awarded to Cargill & McMillan.

SWINE DEPARTMENT.

SUPERINTENDENT........R. S. JOHNSTON, Columbus Junction.

POLAND CHINA.

EXHIBITORS.

Chas Ash, West Union, Iowa; A. J. Banks, Montour, Iowa; M. W. Bateman, Monroe, Iowa; John Bell, Wellman, Iowa; J. B. Blackley, Crown Point, Indiana; Henry Bowman, Monroe, Iowa; S. N. Boyd, Russell, Iowa; H. G. Boyer, Lovilla, Iowa; J. F. Bonner, Panora, Iowa; F. L. Brumback, Cissna Park, Illinois; F. L. Bunton, West Union, Iowa; S. P. Chiles, Fairfield, Iowa; S. P. Chiles & F. D. Winn, Fairfield, Iowa; J. I. Davis, Mount Hammill, Iowa; A. W. DeWitt, Russell, Iowa; J. R. Elben & Sons, Massena, Iowa; J. T. Elerback, Beatrice, Nebraska; J. H. Fawcett, Woodstock, Illinois; O. L. Fay, Oneida, Illinois; R. H. Fitchenmiller, Farmington, Iowa; John Francis & Sons, New Lenox, Illinois; J. M. Frey & Sons, Wadena, Iowa; G. Friday & Sons, Sigourney, Iowa; J. Walter Garvey, Thayer, Illionis; Gates Bros., Ravenwood, Missouri; John H. Gibbens, North English, Iowa; M. J. Giblin, Parnell, Iowa; A. Glenn, Chicago, Illinois; J. A. Goltry, Russell, Iowa; B. L. Gosick, Fairfield, Iowa; Hanson, Black & Gaffery, Holbrook, Iowa; W. H. Harrison, Wright, Iowa; J. H. Harvey & Son, Marysville, Missouri; Hemmerling & Palmer, Dike, Iowa; A. W. Holland, New London, Iowa; J. R. Hoover & Sons, Oskaloosa, Iowa; M. C. Howard, Grand Junction, Iowa; L. Hunsberger, Elgin, Iowa; B. F. Ishmael, Laredo, Missouri; Harvey Johnson, Logan, Iowa F. D. Kenworthy, Avon, Iowa; Wm. Kirk, Logan, Iowa; Chas. A. Lewis, Beatrice, Nebraska; Lingenfelter & West, Altoona, Iowa; Jas. W. Locke & Co., Remington, Indiana; J. L. Logg, Maxwell, Iowa; A. J. Lytle, Oskaloosa, Iowa; J. A. Mason, Carlisle, Iowa; N. F. Miller, Knoxville, Iowa; E. M. & A. D. Mitchell, Reinbeck, Iowa; Moon & Brown, Cromwell, Iowa; Morris Bros. & Nicholson, Lohrville, Iowa; D. S. Needham, Woodward, Iowa; O'Donnell & McCoy, Colo, Iowa; F. N. Orr, Albia, Iowa; E. G. Pace, Muscatine, Iowa; J. M Pease & A. J. Pinck, Colfax, Iowa; Wm. Pedrick & Son, Ottumwa, Iowa; G. A. Perry, Knoxville, Iowa; M. D. Porter, Vandalia, Missouri; Geo. Preston, West Branch, Iowa; J. S. Price, Muscatine, Iowa; Probert Bros., Wadena, Iowa; C. L. Prouty, Council Bluffs, Iowa; C. W. Ramsey, Oakley, Iowa; B. T. Ray & B. O. Hunt, Ravenswood, Missouri; Andrew Rossow, Lohrville, Iowa; P. F. Sanders, Sigourney, Iowa; Al Schwaller, Burlington, Iowa; E. A. Seaba, Sigourney, Iowa; Mark I. Shaw, Monroe, Iowa; Smith & Fay, Oneida, Illinois; Chas. H. Stone, Muscatine, Iowa; W. G. Stevenson, Knoxville, Iowa; Strater Bros., Monroe, Iowa; W. Z. Swallow & Son, Waukee, Iowa; Dr. R. W. Thomas, St. Joseph, Missouri; A. G. Tweed, LeGrand, Iowa; E. G. Tweed, LeGrand, Iowa; M. M. Unterkirchner, Wever, Iowa; R. C. Walker, Augusta, Illinois; J. H. Watson, Madrid, Iowa; Wellington & Arbuckle, Hope, Indiana; R. E. West, Altoona, Iowa; G. H. White, Emerson, Iowa; Oliver Whiteman, Biggsville, Illinois; Wm. Wingate, Trenton, Missouri; F. D. Winn, Randolph, Missouri; Frank Wolgamuth, Elgin, Iowa.

AWARDS.

JUDGE.........................WILSON ROWE, Ames, Iowa.

Boar Two Years Old or Over—First, Oliver Whitman; second, J. R. Eblen & Sons; third, F. N. Orr; fourth, Moon & Brown; fifth, G. H. White; sixth, M. D. Porter; seventh, Chas. A. Lewis.

Boar Eighteen Months and Under Two Years—First, Frank Wolgamuth; second, S. P. Chiles; third, H. G. Boyer; fourth, L. Hunsberger; fifth, F. L. Bunton; sixth, F. L. Brumback; seventh, Chas. A. Lewis.

Boar One Year and Under Eighteen Months—First, J. Walter Garvey; second, A. W. Holland; third, Dr. R. W. Thomas; fourth, Chas. A. Lewis; fifth, John H. Gibbens; sixth, Al Schwaller; seventh, O. L. Fay.

Boar Six Months and Under One Year—First, J. W. Fawcett; second, Wellington & Arbuckle; third, W. Z. Swallow; fourth, M. M. Unterkirchner; fifth, Jas. W. Locke & Co.; sixth, Harvey Johnson; seventh, Dr. R. W. Thomas.

Boar Under Six Months—First, Wm. Wingate; second, B. L. Gosick; third, S. P. Chiles & F. D. Winn; fourth, S. P. Chiles & F. D. Winn; fifth, Wm. Wingate; sixth, J. S. Fawcett & Sons; seventh, Geo. Preston.

Sow Two Years Old or Over—First, Hemmerling & Palmer; second, W. Z. Swallow; third, Wm. Kirk; fourth, A. W. DeWitt; fifth, E. G. Tweed; sixth, E. G. Tweed; seventh, Chas. A. Lewis.

Sow Eighteen Months and Under Two Years—First, F. D. Winn; second, F. D. Winn; third, Wellington & Arbuckle; fourth, Jas. W. Locke & Co.; fifth, E. G. Pace; sixth, Hammerling & Palmer; seventh, Jas. W. Locke & Co.;

Sow One Year and Under Eighteen Months—First, F. D. Winn; second, F. D. Winn; third, E. M. & A. D. Mitchell; fourth, B. L. Gosick; fifth, Wellington & Arbuckle; sixth, F. D. Winn; seventh, Jas. W. Locke & Co.

Sow Six Months and Under One Year—First, Wellington & Arbuckle, second, J. H. Fawcett; third, Dr. R. W. Thomas; fourth, Jas. W. Locke & Co.; fifth, O'Donnell & McCoy; sixth, Wellington & Arbuckle; seventh, Wellington & Arbuckle.

Sow Under Six Months—First, S. P. Chiles; second, S. P. Chiles; third, Wellington & Arbuckle; fourth, Wellington & Arbuckle; fifth, Jas W. Locke; sixth, Jas. W. Locke & Co.; seventh, Probert Bros.

Boar and Three Sows Over One Year—First, F. D. Winn; second, A. W. Holland; third, Wellington & Arbuckle; fourth, Jas. W. Locke & Co.; fifth, Hammerling & Palmer; sixth, Chas. A. Lewis; seventh, W. Z. Swallow & Son.

Boar and Three Sows Under One Year—First, J. H. Fawcett; second, Wellington & Arbuckle; third, Jas. W. Locke & Son; fourth, Al Schwaller; fifth, E. G. Tweed; sixth, Dr. R. W. Thomas; seventh, J. T. Elerback.

Boar and Three Sows Under One Year Bred by Exhibitor—First, F. D. Winn; second, Jas. W. Locke & Co.; third, Hammerling & Palmer.

Boar and Three Sows Under One Year Bred by Exhibitor—First, J. H. Fawcett; second, Wellington & Arbuckle; third, Jas. W. Locke & Co.; fourth, Al Schwaller; fifth, E. G. Tweed; sixth, Dr. R. W. Thomas; seventh, J. T. Elerback.

Get of Sire—First, F. D. Winn; second, J. H. Fawcett; third, Wellington & Arbuckle; fourth, Jas. W. Locke & Co.; fifth, Jas. W. Locke & Co.; sixth, Al Schwaller; seventh, Dr. R. W. Thomas.

Produce of Sow—First, S. P. Chiles; second, S. P. Chiles & F. D. Winn; third, Geo. Preston; fourth, Jas. W. Locke & Co.; fifth, Wm. Pedrick & Son; sixth, Wm. Pedrick & Son; seventh, C. W. Ramsey.

Champion Boar Any Age—Frank Wolgamuth.

Champion Sow Any Age—F. D. Winn.

Champion Boar Any Age Bred by Exhibitor—J. Walter Garvey.

Champion Sow Any Age Bred by Exhibitor—F. D. Winn.

BERKSHIRES.

EXHIBITORS.

H. U. Hainline, Orient, Iowa; Houghton & Braman, Marshalltown, Iowa; C. D. Johnson, Nashua, Iowa; W. O. Knapp, Guthrie Center, Iowa; John C. Miller, Harlan, Iowa; Miller & Deitrich, Menlo, Iowa.

AWARDS.

JUDGE........................N. G. GENTRY, Sedalia, Missouri.

Boar Three Years Old or Over—First, H. U. Hainline; second, C. D. Johnson; third, Miller & Deitrich; fourth, Houghton & Braman; fifth, Houghton & Braman.

Boar Eighteen Months and Under Two Years—First, C. D. Johnson; second, Houghton & Braman.

Boar One Year Old and Under Eighteen Months—First, C. D. Johnson; second, C. D. Johnson; third, Houghton & Braman.

Boar Six Months and Under One Year—First, C. D. Johnson; second, H. U. Hainline; third, H. U. Hainline, fourth, Miller & Deitrich; fifth, Miller & Deitrich.

Boar Under Six Months—First, Miller & Deitrich; second, H. U. Hainline; third, C. D. Johnson; fourth, H. U. Hainline; fifth, Miller & Deitrich.

Sow Two Years Old and Over—First, H. U. Hainline; second, C. D. Johnson; third, John C. Miller; fourth, Houghton & Braman.

Sow Eighteen Months and Under Two Years—First, C. D. Johnson; second, John C. Miller.

Sow One Year and Under Eighteen Months—First, C. D. Johnson; second, C. D. Johnson; third, C. D. Johnson; fourth, Houghton & Braman; fifth, John C. Miller.

Sow Six Months and Under One Year—First, C. D. Johnson; second, Miller & Deitrich; third, fourth and fifth, H. U. Hainline.

Sow Under Six Months—First, Miller & Deitrich; second Miller & Deitrich; third, H. U. Hainline; fourth and fifth, C. D. Johnson.

Boar and Three Sows Over One Year—First and second, C. D. Johnson; third, John C. Miller; fourth, Houghton & Braman.

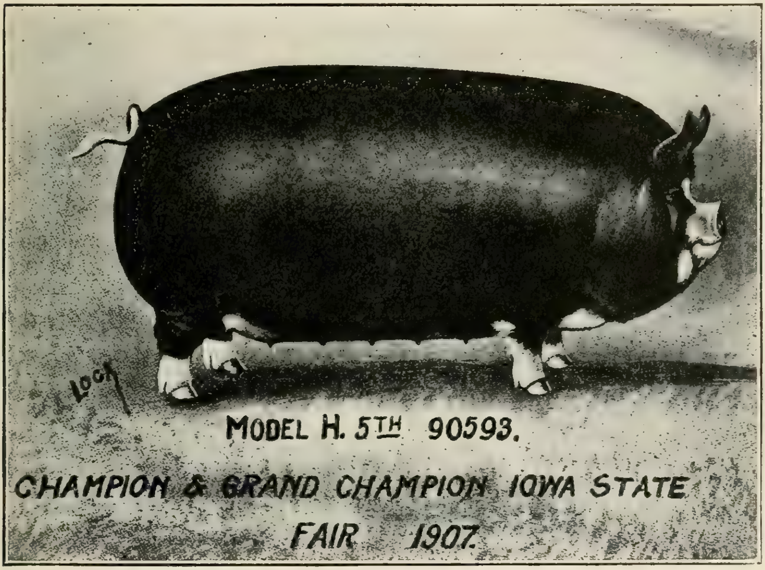
Boar and Three Sows Under One Year—First, C. D. Johnson; second, Miller & Deitrich; third and fourth, H. U. Hainline; fifth, Houghton & Braman.

Boar and Three Sows Over One Year Bred by Exhibitor—First, C. D. Johnson; second, Houghton & Braman.

Boar and Three Sows Under One Year Bred by Exhibitor—First, C. D. Johnson; second, Miller & Deitrich; third H. U. Hainline; fourth, H. U. Hainline; fifth, Houghton & Braman.

Get of Sire—First and second, C. D. Johnson; third, Miller & Deitrich; fourth, H. U. Hainline; fifth, Miller & Deitrich.

Produce of Sow—First, Miller & Deitrich; second, H. U. Hainline; third, C. D. Johnson.



Berkshire sow exhibited at Iowa State Fair and Exposition 1907 by H. U. Hainline, Orient, Iowa.

Champion Boar Any Age—H. U. Hainline.
Champion Sow Any Age—H. U. Hainline.
Champion Boar Any Age Bred by Exhibitor—C. D. Johnson.
Champion Sow Any Age Bred by Exhibitor—H. U. Hainline.

CHESTER WHITE.

EXHIBITORS.

Allen Bros., Russell, Iowa; J. L. Barber, Harlan, Iowa; W. T. Barr, Ames, Iowa; B. M. Boyer, Farmington, Iowa; E. J. Brouhard, Colo, Iowa; G. T. Clark, Pella, Iowa; W. H. Dunbar, Jefferson, Iowa; B. M. Eastburn, Hillsboro, Iowa; A. B. Heath, Newell, Iowa; W. F. Hemmerling, Dike, Iowa; J. W. Holowell, Fairfield, Iowa; Humbert & White, Nashua, Iowa; A. J. Johnson, Brighton, Iowa; Geo. H. Lawshe, Harlan, Iowa; E. J. Leavens, Shell Rock, Iowa; J. A. Loughridge, Delta, Iowa; J. H. Mahanna, North English, Iowa; Wm. Michael, Selma, Iowa; S. B. Mills, Ames, Iowa; E. L. Nagle & Son, Deep River, Iowa; H. L. Orcutt, Monroe, Iowa; O. Osborne, Maxwell, Iowa; N. A. Ranck & Co., Niota, Iowa; Clark Richardson, Pella, Iowa; S. W. Stevens, Collins, Iowa; Wm. Whitted, Monroe, Iowa.

AWARDS.

JUDGE....................N. H. GENTRY, Sedalia, Missouri.

Boar Two Years Old or Over—First, H. L. Orcutt; second, S. W. Stevens; third, Humbert & White; fourth, A. B. Heath; fifth, E. L. Nagle & Son; sixth, J. W. Holowell; seventh Humbert & White.

Boar Eighteen Months and Under Two Years—First, Humbert & White; second, Humbert & White; third, Wm. Michael; fourth, N. A. Ranck & Co.; fifth, A. J. Johnson; sixth, Humbert & White; seventh, W. T. Barr.

Boar One Year and Under Eighteen Months—First, W. F. Hemmerling; second and third, Humbert & White; fourth, E. J. Brouhard; fifth, Allen Bros.; sixth, J. L. Barber; seventh, E. J. Brouhard.

Boar Six Months and Under One Year—First and second, Humbert & White; third and fourth, W. F. Hemmerling; fifth and sixth, Humbert & White; seventh, J. L. Barber.

Boar Under Six Months—First and second, J. H. Mahanna, third, W. H. Dunbar; fourth, E. L. Nagle & Son; fifth, J. L. Barber; sixth, W. T. Barr; seventh, Allen Bros.

Sow Two Years Old or Over—First, J. L. Barber; second, Humbert & White; third, W. F. Hemmerling; fourth, Humbert & White, fifth and sixth, J. L. Barber.

Sow Eighteen Months and Under Two Years—First and second, Humbert & White; third, J. L. Barber; fourth, Humbert & White.

Sow One Year and Under Eighteen Months—Frst, J. L. Barber; second and third, Humbert & White; fourth, J. L. Barber; fifth, Humbert & White; sixth and seventh, Geo. H. Lawshe.

Sow Six Months and Under One Year—First and second, Humbert & White; third, J. L. Barber; fourth, W. F. Hemmerling; fifth, Humbert & White; sixth, E. L. Nagle & Sons; seventh, N. A. Ranck & Co.

Sow Under Six Months—First and second, J. A. Loughridge; third, W. T. Barr; fourth, J. A. Loughridge; fifth, W. T. Barr; sixth, J. L. Barber; seventh, E. J. Brouhard.

Boar and Three Sows Over One Year—First and second, Humbert & White; third and fourth, J. L. Barber.

Boar and Three Sows Under One Year—First and second, Humbert & White; third, W. F. Hemmerling; fourth, J. H. Mahanna; fifth, J. L. Barber; sixth, J. A. Loughridge; seventh, W. T. Barr.

Boar and Three Sows Over One Year Bred by Exhibitor—First and second, Humbert & White; third, J. L. Barber.

Boar and Three Sows Under One Year Bred by Exhibitor—First and second, Humbert & White; third, W. F. Hemmerling; fourth, J. H. Mahanna; fifth, J. L. Barber; sixth, J. A. Loughridge; seventh, W. T. Barr.

Get of Sire—First and second, Humbert & White; third, W. F. Hemmerling; fourth, J. H. Mahanna; fifth, J. L. Barber; sixth, J. A. Loughridge; seventh, W. T. Barr.

Produce of Sow—First, J. H. Mahanna; second, J. A. Loughridge; third, W. T. Barr; fourth, A. B. Heath; fifth, Allen Bros.; sixth, Wm. Whitted; seventh, J. L. Barber.

Champion Boar, Any Age—H. L. Orcutt.

Champion Sow, Any Age—J. L. Barber.

Champion Boar, Any Age, Bred by Exhibitor—H. L. Orcutt.

Champion Sow, Any Age, Bred by Exhibitor—Humbert & White.

DUROC JERSEY.

EXHIBITORS.

Edw. Aldrich, Rosemond, Illinois; H. S. Allen, Russell, Iowa; A. P. Alsin, Boone, Iowa; Geo. Askren, Tingley, Iowa; L. Baker, Mingo, Iowa; Balmot & Son, Mason City, Iowa; E. & C. V. Beaver, Anita, Iowa; W. R. Bennethum, Madrid, Iowa; Reynold Blafield, Central City, Iowa; O. H. Chitty, Toledo, Iowa; S. G. Collicot, Lake City, Iowa; Comer & Gilliland, Carlinville, Illinois; E. J. Compton, Newell, Iowa; J. A. Cottingham, Indianola, Iowa; E. E. Courtright & Son, Pilot Mound, Iowa; M. C. Cramer, Monroe, Iowa; H. G. Davidson, Brooklyn, Iowa; U. G. Davidson, Manson, Iowa; John Dulaney, Blair, Nebraska; Easton Bros., Galva, Iowa; Sherman Edwards, Bondurant, Iowa; M. M. Elmendorf, Lacona, Iowa; F. Fowler & Son, Menlo, Iowa; S. P. Freed, Ames, Iowa; F. E. Garrett, Lohrville, Iowa; F. W. Geno, Sigourney, Iowa; S. A. & G. A. Grimes, Russell, Iowa; Hanks & Bishop, New London, Iowa; R. J. Harding, Macedonia, Iowa; W. J. Hartung, Maxwell, Iowa; John Henderson, Panora, Iowa; Mrs. F. H. Herring, Kalona, Iowa; Dwight Hills, Cedar Falls, Iowa; G. W. Hockett, Manning, Iowa; G. N. Hoffman, Sigourney, Iowa; W. H. Hudson, Lohrville, Iowa; Claude Huffman, Scranton, Iowa; Edw. Hummer, Iowa City, Iowa; Ira Jackson, Tippecanoe City, Ohio; Johnson Bros. & Newkirk, Brooklyn and Rose Hill, Iowa; John Justice, Ankeny, Iowa; W. D. Kail, Carlisle, Iowa; O. A. Kilpatrick, Harlan, Iowa; W. F. Kilpatrick, Harlan, Iowa; Kilpatrick & Wilson, Bethany, Nebraska; Geo. Kopf, Farrar, Iowa; H. W. Lineweaver, South English, Iowa; C. E. Longnecker, Maxwell, Iowa; Geo. L. Lust, Monroe, Iowa; C. A. McCune, Menlo, Iowa; Chas. G. McGinnis, Nevinville, Iowa; S. J. Madison, Nevinville, Iowa; Geo. Manfold, Shannon City, Iowa; B. C. Martz, Polk City, Iowa; May & Porter, Remington, Indiana; E. D. Michael, Selma, Iowa; Geo. H. Miller, Chariton, Iowa; C. R. Mills, Central City, Iowa; M. S. Moats & Son, Randolph, Nebraska; O. L. Mossman, Polk City, Iowa; A. W. H. Orr, Lorimer, Iowa; O. Osborn, Maxwell, Iowa; O. E. Osborn, Weston, Iowa; J. M. Pease & A. J. Pinck, Colfax, Iowa; Gus A. Pederson, Ocheyedan, Iowa; D. J. Pollock, Thayer, Iowa; A. E. Pousch, Chariton, Iowa; W. J. Prather, Russell, Iowa; W. A. Rankin, Carson, Iowa; A. J. & C. H. Reiser, Sanborn, Iowa; Austin Renshaw, Blair, Nebraska; L. H. Roberts & Son, Paton, Iowa; W. H. Rodenbough, Macedonia, Iowa; E. J. Russell, Blair, Nebraska; Sexsmith & Strong, Greenfield, Iowa; J. C. Smith, Eagle Grove, Iowa; Aug. Sonneland, Harlan, Iowa; Aug. Sonneland & A. Voge, Harlan, Iowa; C. M. Stout, Rose Hill, Iowa; Ed Stout, Rose Hill, Iowa; G. W. Stout, Rose Hill, Iowa; W. F. Stout, Delta, Iowa; J. Stroh, DeWitt, Nebraska; A. T. Sundell, Paton, Iowa; F. S. Taylor, Wellman, Iowa; Taylor & Allen, Humeston, Iowa; G. W. Trone & Son, Rushville, Indiana; C. E. Veak, Essex, Iowa; Aug. N. Voge, Portsmouth, Iowa; A. N. Voge & A. Sonneland, Portsmouth, Iowa; J. E. Wehr, Portsmouth, Iowa; Weighton & Ashby, Audubon, Iowa; Roy West, Bondurant, Iowa; West & Jones, Bondurant and Berwick, Iowa; White & Dewey, Shannon City, Iowa; W. L. Wiley, Menlo, Iowa; C. A. Wright, Rosendale, Missouri; W. L. Wright, Jr., Rosendale, Missouri.

AWARDS.

JUDGE....................J. E. DRAKE, Yellow Springs, Ohio.

Boar Two Years Old or Over—First, G. W. Hockett; second, Johnson Bros. & Newkirk; third, E. J. Russell; fourth, S. P. Freed; fifth, M. S. Moats & Son; sixth, L. H. Roberts & Son; seventh, E. J. Russell.

Boar Eighteen Months and Under Two Years—First, A. N. Voge & A. Sonneland; second, Ira Jackson; third, R. J. Harding; fourth, Hanks & Bishop.

Boar One Year and Under Eighteen Months—First, Comer & Gilliland; second and third, Johnson Bros. & Newkirk; fourth, O. E. Osborn; fifth, Gus A. Pederson; sixth, Hanks & Bishop; seventh, Kilpatrick & Wilson.

Boar Six Months and Under One Year—First, Ira Jackson; second, R. J. Harding; third, H. W. Lineweaver; fourth, Johnson Bros. & Newkirk; fifth, W. F. Stout; sixth, A. T. Sundell; seventh, W. H. Rodenbough.

Boar Under Six Months—First, F. Fowler & Son; second, O. A. Kilpatrick; third, Johnson Bros. & Newkirk; fourth, Edw. Aldrich; fifth, W. F. Kilpatrick; sixth, Sexsmith & Strong; seventh, W. H. Rodenbough.

Sow Two Years Old or Over—First, Ira Jackson; second, Johnson Bros. & Newkirk; third, W. F. Kilpatrick; fourth, L. H. Roberts & Son; fifth, L. H. Roberts & Son; sixth, G. W. Hockett; seventh, Claude Huffman.

Sow Eighteen Months and Under Two Years—First, F. E. Garrett; second, O. E. Osborn; third, Johnson Bros. & Newkirk; fourth, A. E. Pousch; fifth, Balmot & Son; sixth, Ira Jackson; seventh, Easton Bros.

Sow One Year and Under Eighteen Months—First, F. E. Garrett; second, G. W. Hockett; third, Aug. N. Voge; fourth, Johnson Bros. & Newkirk; fifth, Easton Bros.; sixth, L. H. Roberts & Son; seventh, A. T. Sundell.

Sow Six Months and Under One Year—First, W. H. Rodenbough; second, Ira Jackson; third, Johnson Bros. & Newkirk; fourth, W. F. Kilpatrick; fifth, Roy West; sixth, R. J. Harding; seventh, A. T. Sundall.

Sow Under Six Months—First, Johnson Bros. & Newkirk; second, Easton Bros.; third, Geo. Manfold; fourth, G. W. Trone & Son; fifth, Hanks & Bishop; sixth, Mrs. F. H. Herring; seventh, F. Fowler & Son.

Boar and Three Sows Over One Year—First, G. W. Hockett; second, Johnson Bros. & Newkirk; third, L. H. Roberts & Son; fourth, O. E. Osborne; fifth, Ira Jackson; sixth, L. H. Roberts & Son; seventh, Johnson Bros. & Newkirk.

Boar and Three Sows Under One Year—First, Ira Jackson; second, R. J. Harding; third and fourth, Johnson Bros. & Newkirk; fifth, W. F. Stout; sixth, A. T. Sundell; seventh, W. J. Prather.

Boar and Three Sows Over One Year Bred by Exhibitor—First, Johnson Bros. & Newkirk; second, O. E. Osborne; third, Johnson Bros. & Newkirk; fourth, Ira Jackson; fifth, H. S. Allen; sixth, Easton Bros.; seventh, E. J. Compton.

Boar and Three Sows Under One Year Bred by Exhibitor—First, Ira Jackson; second, R. J. Harding; third and fourth, Johnson Bros. & Newkirk; fifth, F. Fowler & Son; sixth, Johnson Bros. & Newkirk; seventh, G. W. Trone & Son.

Get of Sire—First, Johnson Bros. & Newkirk; second, Ira Jackson; third, E. J. Russell; fourth, R. J. Harding; fifth, L. H. Roberts & Son; sixth, Johnson Bros. & Newkirk; seventh, G. W. Trone & Son.

Produce of Sow—First, Johnson Bros. & Newkirk; second, G. W. Trone & Son; third, Geo. Manfold; fourth, J. A. Cottingham; fifth, W. F. Stout; sixth, Sexsmith & Strong; seventh, W. F. Kilpatrick.

Champion Boar, Any Age—Comer & Gilliland.

Champion Sow, Any Age—F. E. Garrett.

Champion Boar, Any Age, Bred by Exhibitor—Johnson Bros. & Newkirk.

Champion Sow, Any Age, Bred by Exhibitor—Johnson Bros. & Newkirk.

LARGE YORKSHIRE.

EXHIBITORS.

Jas. Atkinson, Des Moines, Iowa; B. F. Davidson, Menlo, Iowa; Mike Messenger, Dale, Iowa; J. L. Todd & Son, Woodward.

AWARDS.

JUDGE......................J. J. FERGUSON, Chicago, Illinois.

Boar Two Years Old or Over—First, Jas. Atkinson; second, B. F. Davidson.

Boar One Year and Under Eighteen Months—First, B. F. Davidson; second and third, J. L. Todd & Son.

Boar Six Months and Under One Year—First and second, B. F. Davidson; third, Jas. Atkinson; fourth, B. F. Davidson; fifth, Jas. Atkinson.

Boar Under Six Months—First, second, third and fourth, B. F. Davidson; fifth, Jas. Atkinson.

Sow Two Years Old or Over—First and second, B. F. Davidson; third and fourth, Jas. Atkinson; fifth, B. F. Davidson.

Sow Eighteen Months and Under One Year—First, J. L. Todd & Son.

Sow One Year and Under Eighteen Months—First, B. F. Davidson; second, J. L. Todd & Son; third, B. F. Davidson; fourth, Mike Messenger; fifth, J. L. Todd & Son.

Sow Six Months and Under One Year—First and second, Jas. Atkinson; third, fourth and fifth, B. F. Davidson.

Sow Under Six Months—First and second, B. F. Davidson; third and fourth, Jas. Atkinson; fifth, B. F. Davidson.

Boar and Three Sows Over One Year—First, Jas. Atkinson; second, B. F. Davidson; third, J. L. Todd & Son; fourth, Mike Messenger.

Boar and Three Sows Under One Year—First and second, B. F. Davidson; third, Jas. Atkinson; fourth, J. L. Todd & Son.

Boar and Three Sows Over One Year Bred by Exhibitor—First, Mike Messenger.

Boar and Three Sows Under One Year Bred by Exhibitor—First and second, B. F. Davidson; third, Jas. Atkinson; fourth, J. L. Todd & Son.

Get of Sire—First and second, B. F. Davidson; third, Jas. Atkinson; fourth, J. L. Todd & Son.

Produce of Sow—First, B. F. Davidson; second, Jas. Atkinson; third, B. F. Davidson; fourth, J. L. Todd & Son; fifth, Mike Messenger.

Champion Boar, Any Age—Jas. Atkinson.

Champion Sow, Any Age—B. F. Davidson.

Champion Boar, Any Age, Bred by Exhibitor—B. F. Davidson.

Champion Sow, Any Age, Bred by Exhibitor—B. F. Davidson.

TAMWORTH.

EXHIBITORS.

J. W. Justice, Kalona, Iowa; Nye Patterson, Kalona, Iowa; C. C. Roup, Kalona, Iowa; Dr. E. O. Thomas, Kalona, Iowa; Frank Thornber, Carthage, Illinois.

AWARDS.

JUDGE......................J. J. FERGUSON, Chicago, Illinois.

Boar Two Years Old or Over—First, Frank Thornber; second, J. W. Justice; third, Frank Thornber.

Boar Eighteen Months and Under One Year—First, Nye Patterson.

Boar One Year and Under Eighteen Months—First, C. C. Roup; second, J. W. Justice; third, Frank Thornber; fourth, J. W. Justice.

Boar Six Months and Under One Year—First, Frank Thornber; second, J. W. Justice; third, C. C. Roup; fourth, Frank Thornber.

Boar Under Six Months—First, Dr. E. O. Thomas; second and third, J. W. Justice; fourth, Nye Patterson; fifth, Frank Thornber.

Sow Two Years Old or Over—First, C. C. Roup; second and third, Frank Thornber; fourth, J. W. Justice.

Sow Eighteen Months and Under Two Years—First, Frank Thornber; second, C. C. Roup.

Sow One Year and Under Eighteen Months—First, Frank Thornber; second, C. C. Roup; third, J. W. Justice; fourth, Frank Thornber; fifth, Nye Patterson.

Sow Six Months and Under One Year—First, C. C. Roup; second, Frank Thornber; third, C. C. Roup.

Sow Under Six Months—First, Frank Thornber; second, Dr. E. O. Thomas; third, J. W. Justice; fourth, J. W. Justice; fifth, C. C. Roup.

Boar and Three Sows Over One Year—First, Frank Thornber; second, C. C. Roup; third, J. W. Justice.

Boar and Three Sows Under One Year—First, Frank Thornber; second, J. W. Justice; third, Nye Patterson.

Boar and Three Sows Over One Year Bred by Exhibitor—First and second, Frank Thornber.

Boar and Three Sows Under One Year Bred by Exhibitor—First, J. W. Justice; second, Nye Patterson; third, Frank Thornber.

Get of Sire—First, Frank Thornber; second, J. W. Justice; third, C. C. Roup; fourth, Nye Patterson; fifth, Frank Thornber.

Produce of Sow—First, J. W. Justice; second, Nye Patterson; third, Frank Thornber; fourth, C. C. Roup.

Champion Boar Any Age—Frank Thornber.

Champion Sow, Any Age—C. C. Roup.

Champion Boar, Any Age, Bred by Exhibitor—Dr. E. O. Thomas.

Champion Sow, Any Age, Bred by Exhibitor—C. C. Roup.

SHEEP DEPARTMENT.

SUPERINTENDENT..................H. L. PIKE, Whiting, Iowa.

MERINOS, AMERICAN, SPANISH OR DELAINE.

EXHIBITORS.

E. M. Moore, Orchard Lake, Michigan; M. L. Wheeler, Belknap, Iowa.

AWARDS.

JUDGE......................G. W. HERVEY, Omaha, Nebraska.

Ram Two Years Old or Over—First, E. M. Moore; second, M. L. Wheeler; third, E. M. Moore.

Ram One Year Old and Under Two—First and second, E. M. Moore.

Ram Lamb—First and second, E. M. Moore.

Ewe Two Years Old or Over—First, second and third, E. M. Moore.

Ewe One Year Old and Under Two—First, second and third, E. M. Moore.

Ewe Lamb—First and second, E. M. Moore.

Get of Sire—E. M. Moore.

Flock—First and second, E. M. Moore.

Champion Pure Bred Ram, Any Age—E. M. Moore.

Champion Pure Bred Ewe, Any Age—E. M. Moore.

RAMBOUILLET.

EXHIBITORS.

P. Clark & Son, Cable, Ohio; Dixon & Deaner, Brandon, Wisconsin; E. M. Moore, Orchard Lake, Michigan; M. L. Wheeler, Belknap, Iowa; Robt. Taylor, Abbott, Nebraska.

AWARDS.

JUDGE.....................G. W. HERVEY, Omaha, Nebraska.

Ram Two Years Old or Over—First, Robt. Taylor; second, Dixon & Deaner; third, E. M. Moore.

Ram One Year Old and Under Two—First, E. M. Moore; second, Dixon & Deaner; third, E. M. Moore.

Ram Lamb—First, P. Clark & Son; second, Robt. Taylor; third, E. M. Moore.

Ewe Two Years or Over—First and second, E. M. Moore; third, Dixon & Deaner.

Ewe One Year Old and Under Two—First and second, Robt. Taylor; third, Dixon & Deaner.

Ewe Lamb—First, E. M. Moore; second, R. Clark & Son; third, E. M. Moore.

Get of Sire—First, P. Clark & Son; second, Robt. Taylor.

Flock—First, Robt. Taylor; second, Dixon & Deaner.

Champion Pure Bred Ram, Any Age—Robt. Taylor.

Champion Pure Bred Ewe, Any Age—Robt. Taylor.

COTSWOLDS.

EXHIBITORS.

F. H. Coriell, Stockport, Iowa; F. W. Harding, Waukesha, Wisconsin; Lewis Bros., Camp Point, Illinois.

AWARDS.

JUDGE................HOWARD A. CHANDLER, Chariton, Iowa.

Ram Two Years Old or Over—First, Lewis Bros.; second, F. W. Harding; third, Lewis Bros.

Ram One Year Old and Under Two—First, Lewis Bros.; second and third, F. W. Harding.

Ram Lamb—First, F. W. Harding; second, Lewis Bros.; third, F. W. Harding.

Ewe Two Years Old and Over—First and second, F. W. Harding; third, Lewis Bros.

Ewe One Year Old and Under Two—First, F. W. Harding; second, Lewis Bros.; third, F. W. Harding.

Ewe Lamb—First, Lewis Bros.; second and third, F. W. Harding.

Get of Sire—First, Lewis Bros.; second, F. W. Harding.

Flock—First, Lewis Bros.; second, F. W. Harding.

Champion Pure Bred Ram, Any Age—Lewis Bros.

Champion Pure Bred Ewe, Any Age—F. W. Harding.

LEICESTERS.

EXHIBITORS.

Robt. Taylor, Abbott, Nebraska.

AWARDS.

JUDGE......................G. W. HERVEY, Omaha, Nebraska.

Ram Two Years Old or Over—First, Robt. Taylor.
Ram One Year Old and Under Two—First and second, Robt. Taylor.
Ram Lamb—First and second, Robt. Taylor.
Ewe Two Years Old or Over—First and second, Robt. Taylor.
Ewe One Year Old and Under Two—First and second, Robt. Taylor.
Ewe Lamb—First and second, Robt. Taylor.
Get of Sire—First, Robt. Taylor.
Flock—First and second, Robt. Taylor.
Champion Pure Bred Ram, Any Age—Robt. Taylor.
Champion Pure Bred Ewe, Any Age—Robt. Taylor.

LINCOLNS.

EXHIBITORS.

Alex A. Arnold & Sons, Galesville, Wisconsin.

AWARDS.

JUDGE......................G. W. HERVEY, Omaha, Nebraska.

Ram Two Years Old or Over—First, second and third, Arnold & Sons.
Ram One Year Old and Under Two—First, second and third, Arnold & Sons.
Ram Lamb—First, second and third, Arnold & Sons.
Ewe Two Years Old or Over—First, second and third, Arnold & Sons.
Ewe One Year Old and Under Two—First and second, Arnold & Sons.
Ewe Lamb—First and second, Arnold & Sons.
Get of Sire—Arnold & Sons.
Flock—First and second, Arnold & Sons.
Champion Pure Bred Ram, Any Age—Arnold & Sons.
Champion Pure Bred Ewe, Any Age—Arnold & Sons.

HAMPSHIRE DOWNS.

EXHIBITORS.

Alex A. Arnold & Sons, Galesville, Wisconsin; Blanchar Bros., Winnebago, Minnesota; F. W. Harding, Waukesha, Wisconsin; Robt. Taylor, Abbott, Nebraska.

AWARDS.

JUDGE................HOWARD A. CHANDLER, Chariton, Iowa.

Ram Two Years Old or Over—First, F. W. Harding; second and third, Renk Bros.

Ram One Year Old and Under Two—First, Renk Bros.; second, F. W. Harding; third, Renk Bros.

Champion Hampshire Down ram one year old and under two shown at Iowa State Fair and Exposition 1907, by Renk Bros.

Ram Lamb—First, F. W. Harding; second, F. W. Harding; third, Renk Bros.

Ewe Two Years Old or Over—First, Renk Bros.; second and third, F. W. Harding.

Ewe One Year Old and Under Two—First, F. W. Harding; second, Renk Bros.; third, F. W. Harding.

Ewe Lamb—First and second, Renk Bros.; third, F. W. Harding.

Get of Sire—First, Robt. Taylor; second, Alex A. Arnold & Sons.

Champion Pure Bred Ram, Any Age—Renk Bros.

Champion Pure Bred Ewe, Any Age—Renk Bros.

SHROPSHIRES.

EXHIBITORS.

Blanchar Bros., Winnebago, Minnesota; Chandler Bros., Chariton, Iowa; Dixon & Deaner, Brandon, Wisconsin; J. S. Fawcett & Sons, Springdale, Iowa; F. W. Harding, Waukesha, Wisconsin; Kaufman Bros., Monroe, Iowa; F. P. McAdoo, Indianola, Iowa; Geo. McKerrow & Sons, Pewaukee, Wisconsin; O. H. Peasley & Son, Indianola, Iowa; Plumly Bros., Springville, Iowa; Renk Bros., Sun Prairie, Wisconsin; C. J. Wilkinson, Colfax, Iowa.

AWARDS.

JUDGE............................J. A. MCLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, Geo. McKerrow & Sons; second, Chandler Bros.; third, Geo. McKerrow & Sons.

Ram One Year Old and Under Two—First, Chandler Bros.; second, Geo. McKerrow & Sons; third, F. W. Harding.

Ram Lamb—First, Chandler Bros.; second, Geo. McKerrow & Sons; third, Renk Bros.

Ewe Two Years Old or Over—First, Renk Bros.; second, F. W. Harding; third, Chandler Bros.

Ewe One Year Old and Under Two—First, Geo. McKerrow & Sons; second, Renk Bros.; third, F. W. Harding.

Ewe Lamb—First, Geo. McKerrow & Sons; second, Chandler Bros.; third, Renk Bros.

Get of Sire—First, Chandler Bros.; second, O. H. Peasley & Son.

Flock—Geo. McKerrow & Sons.

Champion Pure Bred Ram, Any Age—Chandler Bros.

Champion Pure Bred Ewe, Any Age—Geo. McKerrow & Sons.

Champion Shropshire ram shown by Chandler Bros. at the Iowa State Fair and Exposition 1907.

SPECIAL PREMIUMS OFFERED BY THE AMERICAN SHROPSHIRE REGISTRY ASSOCIATION.

Ram Two Years Old or Over—First, Chandler Bros.; second, Geo. McKerrow & Sons; third, Blanchar Bros.

Ram One Year Old and Under Two—First, Blanchar Bros.; second, Geo. McKerrow & Sons; third, Plumly Bros.

Ram Lamb—First, second and third, O. H. Peasley & Son.

Ewe Two Years Old or Over—First, Chandler Bros.; second, Plumly Bros.; third, Kaufman Bros.

Ewe One Year Old and Under Two—First and second, Blanchar Bros.; third, Plumly Bros.

Ewe Lamb—First, J. S. Fawcett & Son; second, Plumly Bros.; third, O. H. Peasley; fourth, Plumly Bros.

Champion Ram, Any Age—Chandler Bros.

Champion Ewe, Any Age—Chandler Bros.

Get of Sire—First, O. H. Peasley & Son; second, Plumly Bros.; third, Blanchar Bros.

Flock—First, Blanchar Bros.; second, Plumly Bros.; third, O. H. Peasley.

IOWA SHROPSHIRES.

EXHIBITORS.

Chandler Bros., Chariton, Iowa; W. L. Farmer, Indianola, Iowa; J. S. Fawcett & Sons, Springdale, Iowa; Kaufman Bros., Monroe, Iowa; F. P. McAdoo, Indianola, Iowa; O. H. Peasley & Son, Indianola, Iowa; Plumly Bros., Springville, Iowa.

AWARDS.

JUDGE............................J. A. McLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, O. H. Peasley & Son; second, Kaufman Bros.; third, J. S. Fawcett & Son; fourth, Plumly Bros.; fifth, F. P. McAdoo.

Ram One Year Old and Under Two—First, Plumly Bros.; second, O. H. Peasley & Son; third and fourth, Plumly Bros.; fifth, F. P. McAdoo; sixth, J. S. Fawcett & Son; seventh, O. H. Peasley & Son.

Ram Lamb—First, second, third and fourth, O. H. Peasley & Son; fifth, J. S. Fawcett & Son; sixth, W. L. Farmer; seventh, J. S. Fawcett & Son.

Ewe Two Years Old or Over—First, Chandler Bros.; second, Plumly Bros.; third, F. P. McAdoo; fifth, J. S. Fawcett & Son; sixth, O. H. Peasley & Son; seventh, Plumly Bros.

Ewe One Year Old and Under Two—First, second and third, Plumly Bros.; fourth, O. H. Peasley & Son; fifth and sixth, J. S. Fawcett & Son; seventh, W. L. Farmer.

Ewe Lamb—First, J. S. Fawcett & Son; second, Plumly Bros.; third, O. H. Peasley & Son; fourth and fifth, Plumly Bros.; sixth and seventh, Kaufman Bros.

Get of Sire—First, J. S. Fawcett & Son; second, O. H. Peasley & Son; third, Plumly Bros.

Flock—First, Plumly Bros.; second, O. H. Peasley & Son; third, J. S. Fawcett & Sons.

Champion Ram, Any Age—O. H. Peasley & Son.

Champion Ewe, Any Age—Chandler Bros.

OXFORD DOWNS.

EXHIBITORS.

F. H. Coriell, Stockport, Iowa; John Graham & Son, Eldora, Iowa; F. P. McAdoo, Indianola, Iowa; Geo. McKerrow & Sons, Pewaukee, Wisconsin; W. W. Waltmire, Peculiar, Missouri.

AWARDS.

JUDGE............................J. A. MCLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, Geo. McKerrow & Sons; second, F. H. Coriell; third, Geo. McKerrow & Sons.

Ram One Year Old and Under Two—First and second, Geo. McKerrow & Sons; third, F. H. Coriell.

Ram Lamb—First, W. W. Waltmire; second and third, Geo. McKerrow & Sons.

Ewe Two Years Old or Over—First, W. W. Waltmire; second, Geo. McKerrow & Sons; third, W. W. Waltmire.

Ewe One Year Old and Under Two—First and second, Geo. McKerrow & Sons; third, F. R. Coriell.

Ewe Lamb—First and second, W. W. Waltmire; third, Geo. McKerrow & Sons.

Get of Sire—First, John Graham & Son.

Flock—First, Geo. McKerrow & Sons; second, W. W. Waltmire.

Champion Pure Bred Ram of Any Age—Geo. McKerrow & Sons.

Champion Pure Bred Ewe of Any Age—Geo. McKerrow & Sons.

IOWA OXFORD DOWNS.

EXHIBITORS.

F. H. Coriell, Stockport, Iowa; John Graham & Son, Eldora, Iowa; F. P. McAdoo, Indianola, Iowa.

AWARDS.

JUDGE............................J. A. MCLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, John Graham.

Ram One Year Old and Under Two—First and second, John Graham & Son.

Ram Lamb—First, F. P. McAdoo; second, F. H. Coriell; third, John Graham & Son.

Ewe Two Years Old or Over—First, John Graham & Son.

Ewe One Year Old and Under Two—First and second, John Graham & Son.

Ewe Lamb—First, F. H. Coriell; second and third, John Graham & Son.

Get of Sire—First, John Graham & Son; second, F. H. Coriell.

Flock—John Graham & Son.

Champion Ram, Any Age—John Graham & Son.

Champion Ewe, Any Age—John Graham & Son.

SOUTHDOWNS.

EXHIBITORS.

Geo. McKerrow & Sons, Pewaukee, Wisconsin.

AWARDS.

JUDGE......................G. W. HERVEY, Omaha, Nebraska.

Ram Two Years Old or Over—First and second, Geo. McKerrow & Sons.

Ram One Year Old and Under Two—First and second, Geo. McKerrow & Sons.

Ram Lamb—First, Geo. McKerrow & Sons.

Ewe Two Years Old or Over—First and second, Geo. McKerrow & Sons.

Ewe One Year Old and Under Two—First and second, Geo. McKerrow & Sons.

Ewe Lamb—First and second, Geo. McKerrow & Sons.

Flock—First and second, Geo. McKerrow & Sons.

Champion Pure Bred Ram, Any Age—Geo. McKerrow & Sons.

Champion Pure Bred Ewe, Any Age—Geo. McKerrow & Sons.

DORSETS.

EXHIBITORS.

Harry H. Wheeler, Elburn, Illinois.

AWARDS.

JUDGE......................G. W. HERVEY, Omaha, Nebraska.

Ram Two Years Old or Over—First, Harry H. Wheeler.

Ram One Year and Under Two—First, Harry H. Wheeler.

Ram Lamb—First, Harry H. Wheeler.

Ewe Two Years Old and Under Two—First, Harry H. Wheeler.

Ewe Lamb—First, Harry H. Wheeler.

Champion Pure Bred Ram, Any Age—Harry H. Wheeler.

Champion Pure Bred Ewe, Any Age—Harry H. Wheeler.

CHEVIOTS.

EXHIBITORS.

M. P. & S. E. Lantz, Carlock, Illinois; G. W. Parnell, Wingate, Indiana.

AWARDS.

JUDGE................HOWARD A. CHANDLER, Chariton, Iowa.

Ram Two Years Old or Over—First and second, G. W. Parnell; third, M. P. & S. E. Lantz.

Ram One Year Old and Under Two—First, G. W. Parnell; second and third, M. P. & S. E. Lantz.

Ram Lamb—First, M. P. & S. E. Lantz; second, G. W. Parnell; third, M. P. & S. E. Lantz.

Ewe Two Years Old or Over—M. P. & S. E. Lantz; second and third, G. W. Parnell.

Ewe One Year Old and Under Two—First, G. W. Parnell; second, M. P. & S. E. Lantz; third, G. W. Parnell.

Ewe Lamb—First, M. P. & S. E. Lantz; second, G. W. Parnell; third, M. P. and S. E. Lantz.

Get of Sire—First, M. P. & S. E. Lantz; second, G. W. Parnell.

Flock—First, G. W. Parnell; second, M. P. & S. E. Lantz.

Champion Pure Bred Ram, Any Age—G. W. Parnell.

Champion Pure Bred Ewe, Any Age—M. P. & S. E. Lantz.

POULTRY DEPARTMENT.

SUPERINTENDENT..................H. L. PIKE, Whiting, Iowa.

AMERICANS.

EXHIBITORS.

Allen Bros., Russell, Iowa; A. L. Anderson, Indianola, Iowa; Mrs. N. B. Ashby, Des Moines, Iowa; Barker Bros., Indianola, Iowa; C. A. Bloom, Ohio, Illinois; Marion Bruce, Rolfe, Iowa; Floyd Brollier, Stuart, Iowa; M. H. Buck, Prairie City, Iowa; Robt. S. Cooper, Winterset, Iowa; Dr. H. E. Say, Durant, Iowa; John Duff, Winterset, Iowa; Dr. M. M. Evans, LeGrand, Iowa; Ewing Poultry Farm, Carlisle, Iowa; C. J. Fisher, Des Moines, Iowa; A. E. Goodman, Indianola, Iowa; Alma Hanson, Dean, Iowa; Hanson Bros., Dean, Iowa; F. H. Hall, Des Moines, Iowa; W. A. Hartman, Winterset, Iowa; W. O. Harvey, Des Moines, Iowa; F. H. Hollway, Lytton, Iowa; J. R. Hoover & Sons, Oskaloosa, Iowa; Hunkydory Farm, Pella, Iowa; F. W. Johnson, Luther, Iowa; Geo. Judd, Des Moines, Iowa; F. L. Lambert, Des Moines, Iowa; J. S. Mares, Cedar Falls, Iowa; Geo. L. Marsh, Waterloo, Iowa; Dr. N. E. Meghill, Marshalltown, Iowa; F. M. Molby, Creston, Iowa; Ralph I. Moore, Newton, Iowa; North Hill Poultry Farm, Creston, Iowa; D. M. Palmer, Rolfe, Iowa; S. H. Page, Waverly, Iowa; Walter Perkins, Ames, Iowa; Peterson Bros., Indianola, Iowa; Elliott Purmort, Des Moines, Iowa; J. E. Rawson, Cambridge, Iowa; H. H. Rich, Des Moines, Iowa; J. W. Rodebaugh, Indianola, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin; Chas. Scroufe, Rolfe, Iowa; Fred Sherman, Rolfe, Iowa; H. A. Smith, Deep River, Iowa; Anthony Stocker, Des Moines, Iowa; G. W. Stout, Rose Hill, Iowa; F. Summey, Monroe, Iowa; Mrs. Clem Thompson, Albia, Iowa; F. J. Tishenbaumer, Gilmore City, Iowa; H. A. Trimble, Indianola, Iowa; F. F. & V. G. Warner, Bloomfield, Iowa; Chas. A. Waymen, Carlisle, Iowa.

AWARDS.

Judges........................ { F. H. SHELLABARGER, West Liberty, Iowa.
W. S. RUSSELL, Ottumwa, Iowa. }

B. P. Rock Cock—First and second, S. H. Page; third, E. G. Roberts; fourth, J. R. Hoover & Sons.

B. P. Rock Hen—First and second, S. H. Page; third, E. G. Roberts; fourth, G. W. Stout.

B. P. Rock Cockerel—First and second, S. H. Page; third, G. W. Stout; fourth, S. H. Page.

B. P. Rock Pullet—First, S. H. Page; second, M. H. Buck; third and fourth, G. W. Stout.

Buff P. Rock Cock—First, E. G. Roberts; second, H. H. Rich; third, F. H. Hall; fourth, Ewing Poultry Farm.

Buff P. Rock Hen—First, H. H. Rich; second, F. H. Hall; third, H. H. Rich; fourth, Ewing Poultry Farm.

Buff P. Rock Cockerel—First, F. H. Hall; second, E. G. Roberts; third, H. H. Rich.

Buff P. Rock Pullet—First, second and third, H. H. Rich.

W. P. Rock Cock—First, E. G. Roberts; second, F. H. Hollway; third, Ewing Poultry Farm; fourth, Chas. Scroufe.

W. P. Rock Hen—First, Barker Bros.; second, E. G. Roberts; third, Hunkydory Farm; fourth, J. W. Rodebaugh.

W. P. Rock Cockerel—First, Hunkydory Farm; second and third, F. H. Hollway; fourth, Chas. A. Waymen.

W. P. Rock Pullet—First, Hunkydory Farm; second, F. H. Hollway; third, Chas. A. Waymen; fourth, Chas. Scroufe.

P. P. Rock Cock—First, E. G. Roberts; second, Allen Bros.; third, E. G. Roberts.

P. P. Rock Hen—First, Allen Bros.; second and third, E. G. Roberts; fourth, Allen Bros.

P. P. Rock Cockerel—First and second, E. G. Roberts.

P. P. Rock Pullet—First and second, E. G. Roberts.

Partridge Wyandotte Cock—First, Dr. N. E. Meghill; second, E. G. Roberts; third, Allen Bros.

Partridge Wyandotte Hen—First, F. F. & V. G. Warner; second, Dr. N. E. Meghill; third and fourth, Allen Bros.

Partridge Wyandotte Cockerel—First, F. F. & V. G. Warner; second, Dr. N. E. Meghill; third, E. G. Roberts.

Partridge Wyandotte Pullet—First, Dr. N. E. Meghill; second, F. F. & V. G. Warner; third, E. G. Roberts.

S. L. Wyandotte Cock—First, Walter Perkins; second, E. G. Roberts; third, F. W. Johnson; fourth, A. L. Anderson.

S. L. Wyandotte Hen—First, F. F. & V. G. Warner; second, F. W. Johnson; third, A. L. Anderson; fourth, E. G. Roberts.

S. L. Wyandotte Cockerel—First, F. F. & V. G. Warner; second, E. G. Roberts; third, John Duff; fourth, Walter Perkins.

S. L. Wyandotte Pullet—First, F. F. & V. G. Warner; second, John Duff; third, E. G. Roberts; fourth, Peterson Bros.

S. P. Wyandotte Cock—First, E. G. Roberts.

S. P. Wyandotte Hen—First, E. G. Roberts; second and third, F. F. & V. G. Warner.

S. P. Wyandotte Cockerel—First, F. F. & V. G. Warner; second, E. G. Roberts.

S. P. Wyandotte Pullet—First, E. G. Roberts.

Golden Wyandotte Cock—First, Peterson Bros.; second, E. G. Roberts; third, A. L. Anderson.

Golden Wyandotte Hen—First, E. G. Roberts; second, Peterson Bros.; third, A. L. Anderson.

Golden Wyandotte Cockerel—First, Peterson Bros.; second, E. G. Roberts.

Golden Wyandotte Pullet—First, Peterson Bros.; second, E. G. Roberts.

White Wyandotte Cock—First, Geo. L. Marsh; second, E. G. Roberts; third, Mrs. N. B. Ashby; fourth, W. O. Harvey.

White Wyandotte Cockerel—First and second, W. O. Harvey; third, Mrs. N. B. Ashby; fourth, Anthony Stocker.

White Wyandotte Pullet—First, Mrs. N. B. Ashby; second, Anthony Stocker; third, E. G. Roberts; fourth, Mrs. Clem Thompson.

Buff Wyandotte Cock—First, E. G. Roberts; second, F. F. & V. G. Warner; third, A. L. Anderson; fourth, C. J. Fisher.

Buff Wyandotte Hen—First, A. E. Goodman; second, C. A. Bloom; third, C. J. Fisher; fourth, Peterson Bros.

Buff Wyandotte Cockerel—First, M. H. Buck; second and third, C. J. Fisher; fourth, C. A. Bloom.

Buff Wyandotte Pullet—First and second, C. A. Bloom; third, M. H. Buck; fourth, C. A. Bloom.

Black Java Cock—First, E. G. Roberts.

Black Java Hen—First, E. G. Roberts.

Black Java Cockerel—First, E. G. Roberts.

Black Java Pullet—First, E. G. Roberts.

Orpington Cock—First, Dr. M. M. Evans; second and third, Dr. H. E. Day; fourth, Ewing Poultry Farm.

Orpington Hen—First and second, Dr. H. E. Day; third, J. R. Hoover & Sons; fourth, D. M. Palmer.

Orpington Cockerel—First, J. R. Hoover & Sons; second, Robt. S. Cooper; third and fourth, J. R. Hoover & Sons.

Orpington Pullet—First and second, Geo. Judd; third, D. M. Palmer; fourth, Robt. S. Cooper.

Rose Comb R. I. Red Cock—First, Marion Bruce.

Rose Comb R. I. Red Hen—First, F. J. Tishenbaumer; second and third, Marion Bruce.

Rose Comb R. I. Red Cockerel—First, F. J. Tishenbaumer; second, E. G. Roberts; third, Hanson Bros.; fourth, J. E. Rawson.

Rose Comb R. I. Red Pullet—First, E. G. Roberts; second, Marion Bruce; third, J. E. Rawson; fourth, Marion Bruce.

Single Comb R. I. Red Cock—First, E. G. Roberts; second, J. E. Mares; third, Elliott Purmort; fourth, J. W. Rodebaugh.

Single Comb R. I. Red Hen—First, J. C. Mares; second, E. G. Roberts; third, Elliott Purmort.

Single Comb R. I. Red Cockerel—First, E. G. Roberts; second, J. C. Mares; third, J. W. Rodebaugh; fourth, Elliott Purmort.

Single Comb R. I. Red Pullet—First, J. W. Rodebaugh; second, J. C. Mares; third, E. G. Roberts.

Silver Gray Dorking Cock—First and second, E. G. Roberts.

Silver Gray Dorking Hen—First and second, E. G. Roberts.

Silver Gray Dorking Cockerel—First, E. G. Roberts.

Silver Gray Dorking Pullet—First, E. G. Roberts.

ASIATICS.

EXHIBITORS.

Mrs. E. M. Brinkler, Stuart, Iowa; Floyd Brollier, Stuart, Iowa; M. H. Buck, Prairie City, Iowa; R. T. Cameron, Ottumwa, Iowa; Dr. L. D. Carpenter, Indianola, Iowa; Hanson Bros., Dean, Iowa; Wm. Hewitt, Indianola, Iowa; J. R. Hoover & Sons, Oskaloosa, Iowa; F. W. Johnson, Luther, Iowa; L. M. McKay, Des Moines, Iowa; Dr. N. E. Meghill, Marshalltown, Iowa; Osborne Bros., Des Moines, Iowa; Walter Perkins, Ames, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin; R. E. West, Bondurant, Iowa; F. M. Ziegler & Son, Muscatine, Iowa.

AWARDS.

Light Brahma Cock—First, E. G. Roberts; second, R. T. Cameron; third Dr. N. E. Meghill.

Light Brahma Hen—First, Dr. N. E. Meghill; second and third, R. T. Cameron; fourth, J. R. Hoover & Sons.

Light Brahma Cockerel—First, Dr. N. E. Meghill; second, R. T. Cameron; third, Hanson Bros.

Light Brahma Pullet—Dr. N. E. Meghill; second, R. T. Cameron; third, Hanson Bros.

Dark Brahma Cock—First, E. G. Roberts; second, M. H. Buck

Dark Brahma Hen—First and second, M. H. Buck.

Dark Brahma Cockerel—First, M. H. Buck.

Dark Brahma Pullet—First, M. H. Buck.

Buff Cochin Cock—Dr. L. D. Carpenter, second, J. R. Hoover & Sons; third, Dr. L. D. Carpenter; fourth, Floyd Brollier.

Buff Cochin Hen—First and second, Dr. L. D. Carpenter; third, E. G. Roberts; fourth, Floyd Brollier.

Buff Cochin Cockerel—First, Floyd Brollier; second, F. W. Johnson.

Buff Cochin Pullet—First, Floyd Brollier; second, F. W. Johnson.

Partridge Cochin Cock—First, E. G. Roberts; second Osborn Bros.

Partridge Cochin Hen—First, E. G. Roberts; second, Osborn Bros.

Partridge Cochin Cockerel—First, E. G. Roberts; second, Wm. Hewitt; third, M. H. Buck.

Partridge Cochin Pullet—First, E. G. Roberts; second, M. H. Buck; third, Wm. Hewitt; fourth, Mrs. E. M. Brinkler.

Black Langshan Cock—First, E. G. Roberts; second R. E West; third, Walter Perkins.

Black Langshan Hen—First, F. M. Zeigler & Son; second, E. G. Roberts; third, Hanson Bros.; fourth, F. M. Zeigler & Son.

Black Langshan Cockerel—First and second, R. E. West; third, E. G. Roberts; fourth, F. M. Zeigler & Son.

Black Langshan Pullet—First and second, F. M. Zeigler & Son; third, E. G. Roberts; fourth, Walter Perkins.

MEDITERRANEANS.

EXHIBITORS.

A. E. Banta, Wheatland, Iowa; Barker Bros., Indianola, Iowa; M. H. Buck, Prairie City, Iowa; W. O. Coon, Des Moines, Iowa; W. A. Harvey, Winterset, Iowa; W. O. Harvey, Des Moines, Iowa; J. R. Hoover & Sons, Oskaloosa, Iowa; F. W. Johnson, Luther, Iowa; T. L. Lambert, Des Moines, Iowa; John C. Miller, Harlan, Iowa; J. L. Moore, Rolfe, Iowa; Osborn Bros., Des Moines, Iowa; Walter Perkins, Ames, Iowa; Peterson Bros., Indianola, Iowa; John D. Reeler, Mason City, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin; J. W. Rodebaugh, Indianola, Iowa; Mrs. S. P. Rodgers, Pleasanton, Iowa; Anthony Stocker, Des Moines, Iowa; W. T. Wilkinson, Des Moines, Iowa.

AWARDS.

S. C. Brown Leghorn Cock—First, A. E. Banta; second, F. W. Johnson; third, E. G. Roberts; fourth, M. H. Buck.

S. C. Brown Leghorn Hen—First, A, E. Banta; second, F. W. Johnson; third, M. H. Buck.

S. C. Brown Leghorn Cockerel—First, A. E. Banta; second, E. G. Roberts; third, W. O. Coon; fourth, M. H. Buck.

S. C. Brown Leghorn Pullet—First, A. E. Banta; second, M. H. Buck; third, E. G. Roberts; fourth, F. W. Johnson.

R. C. Brown Leghorn Cock—First, J. R. Hoover & Sons.

R. C. Brown Leghorn Hen—First, Barker Bros.; second, J. R. Hoover & Sons; third, M. H. Buck; fourth, Peterson Bros.

R. C. Brown Leghorn Cockerel—First, Barker Bros.; second, M. H. Buck.

R. C. Brown Leghorn Pullet—First, Barker Bros.; second, M. H. Buck.

S. C. White Leghorn Cock—First, E. G. Roberts; second, W. O. Harvey; third, Barker Bros.

S. C. White Leghorn Hen—First, E. G. Roberts; second, Barker Bros.; third, W. O Harvey; fourth, Barker Bros.

S. C. White Leghorn Cockerel—First, Peterson Bros.; second, E. G. Roberts; third, Barker Bros.; fourth, W. A. Hartman.

S. C. White Leghorn Pullet—First, W. O. Harvey; second, E. G. Roberts; third, W. O. Harvey; fourth, Barker Bros.

R. C. White Leghorn Cock—First, John D. Reeler; second, E. G. Roberts; third, M. H. Buck; fourth, Mrs. S. P. Rodgers.

R. C. White Leghorn Hen—First, Mrs. S. P. Rodgers; second E. G. Roberts; third, Mrs. S. P. Rodgers; fourth, J. L. Moore.

R. C. White Leghorn Cockerel—First, E. G. Roberts; second, J. L. Moore; third, John D. Reeler; fourth, J. L. Moore.

R. C. White Leghorn Pullet—First, E. G. Roberts; second, J. L. Moore; third, John D. Reeler; fourth, J. L. Moore.

Buff Leghorn Cock—First, E. G. Roberts; second, Osborn Bros.; third, E. G. Roberts.

Buff Leghorn Hen—First and second, E. G. Roberts; third, Osborn Bros.

Buff Leghorn Cockerel—First and second, E. G. Roberts.

Buff Leghorn Pullet—First and second, E. G. Roberts.

Black Minorca Cock—First, E. G. Roberts.

Black Minorca Hen—First, E. G. Roberts.

Black Minorca Cockerel—First, J. W. Rodebaugh; second, E. G. Roberts.

Black Minorca Pullet—First, E. G. Roberts; second, J. W. Rodebaugh.

Blue Andalusian Cock—First, E. G. Roberts.

Blue Andalusian Hen—First, E. G. Roberts.

Blue Andalusian Cockerel—First, E. G. Roberts.

Blue Andalusian Pullet—First, E. G. Roberts.

POLISH.

EXHIBITORS.

M. H. Buck, Prairie City, Iowa; Osborn Bros., Des Moines, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin.

AWARDS.

W. C. B. Polish Cock—First, Osborn Bros.; second, E. G. Roberts.

W. C. B. Polish Hen—First, E. G. Roberts; second, Osborn Bros.

W. C. B. Polish Cockerel—First, E. G. Roberts.

W. C. B. Polish Pullet—First, E. G. Roberts.

Golden Polish G. or P. Cock—First and second, E. G. Roberts.

Golden Polish G. or P. Hen—First and second, E. G. Roberts.

Golden Polish G. or P. Cockerel—First and second, E. G. Roberts.

Golden Polish B. or P. Pullet—First and second, E. G. Roberts.

Silver Polish B. or P. Cock—First and second, E. G. Roberts.

Silver Polish B. or P. Hen—First and second, E. G. Roberts.

Silver Polish B. or P. Cockerel—First and second, E. G. Roberts.

Silver Polish B. or P. Pullet—First and second, E. G. Roberts.

HAMBURG.

EXHIBITORS.

M. H. Buck, Prairie City, Iowa; Miss L. Cook, Morning Sun, Iowa; Osborn Bros., Des Moines, Iowa; Peterson Bros., Indianola, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin.

AWARDS.

S. S. Hamburg Cock—First, Miss L. Cook; second, Peterson Bros.

S. S. Hamburg Hen—First and second, Miss L. Cook; third and fourth, Osborn Bros.

S. S. Hamburg Cockerel—First and second, Miss L. Cook.

S. S. Hamburg Pullet—First and second, Miss L. Cook; third and fourth, Peterson Bros.

G. S. Hamburg Cock—First, E. G. Roberts.

G. S. Hamburg Hen—First, E. G. Roberts.

G. S. Hamburg Cockerel—First and second, E. G. Roberts.

G. S. Hamburg Pullet—First and second, E. G. Roberts.

White Hamburg Cock—First, E. G. Roberts.

White Hamburg Hen—First, E. G. Roberts.

White Hamburg Cockerel—First, E. G. Roberts.

White Hamburg Pullet—First, E. G. Roberts.

Black Hamburg Cock—First, E. G. Roberts.

Black Hamburg Hen—First, E. G. Roberts.

Black Hamburg Cockerel—First, E. G. Roberts.

Black Hamburg Pullet—First, E. G. Roberts.

FRENCH.

EXHIBITORS.

M. H. Buck, Prairie City, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin; W. T. Wilkinson, Des Moines.

AWARDS.

Houdan Cock—First, E. G. Roberts; second, W. T. Wilkinson.

Houdan Hen—First, E. G. Roberts; second and third, W. T. Wilkinson.

Houdan Cockerel—First and second, E. G. Roberts.

Houdan Pullet—First and second, E. G. Roberts; third, W. T. Wilkinson.

GAMES.

EXHIBITORS.

F. E. Bickel, Des Moines, Iowa; M. H. Buck, Prairie City, Iowa; Peterson Bros., Indianola, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin.

AWARDS.

Cornish Indian Game Cock—First, E. G. Roberts; second, F. E. Bickel.

Cornish Indian Game Hen—First, E. G. Roberts; second, third and fourth, F. E. Bickel.

Cornish Indian Game Cockerel—First, E. G. Roberts; second, F. E. Bickel.

Cornish Indian Game Pullet—First, E. G. Roberts; second, F. E. Bickel.

B. B. Red Game Cock—First, E. G. Roberts.

B. B. Red Game Hen—First, E. G. Roberts.

B. B. Red Game Cockerel—First, second and third, M. H. Buck.

B. B. Red Game Pullet—First and second, M. H. Buck.

Silver Duckwing Game Hen—First, E. G. Roberts.

Golden Duckwing Game Hen—First, E. G. Roberts.

BANTAMS.

EXHIBITORS.

M. H. Buck, Prairie City, Iowa; W. O. Coon, Des Moines, Iowa; J. L. Moore, Rolfe, Iowa; Peterson Bros., Indianola, Iowa; H. H. Rich, Des Moines, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin; F. F. & V. G. Warner, Bloomfield, Iowa; W. T. Wilkinson, Des Moines, Iowa.

AWARDS.

B. B. Red Game Bantam Cock—First, E. G. Roberts.

B. B. Red Game Bantam Hen—First, E. G. Roberts.

B. B. Red Game Bantam Cockerel—First, E. G. Roberts.

B. B. Red Game Bantam Pullet—First, E. G. Roberts.

Red Pyle Bantam Cock—First, E. G. Roberts; second, M. H. Buck.

Red Pyle Bantam Hen—First, E. G. Roberts.

Red Pyle Bantam Cockerel—First and second, E. G. Roberts.

Red Pyle Bantam Pullet—First, E. G. Roberts; second, M. H. Buck; third, E. G. Roberts.

Silver Duckwing Bantam Cock—First, E. G. Roberts.

Silver Duckwing Bantam Hen—First, E. G. Roberts.

Golden Duckwing Bantam Cock—First, E. G. Roberts.

Golden Duckwing Bantam Hen—First, E. G. Roberts.

Golden Duckwing Bantam Cockerel—First, E. G. Roberts.

Golden Duckwing Bantam Pullet—First, E. G. Roberts.

Golden Seabright Bantam Cock—First, E. G. Roberts.

Golden Seabright Bantam Hen—First, E. G. Roberts; second and third, W. O. Coon; fourth, Peterson Bros.

Golden Seabright Bantam Cockerel—First, E. G. Roberts; second, W. O. Coon; third, J. L. Moore.

Golden Seabright Bantam Pullet—First and second, E. G. Roberts.

Silver Seabright Bantam Cock—First and second, E. G. Roberts.

Silver Seabright Bantam Hen—First and second, E. G. Roberts.

Silver Seabright Bantam Cockerel—First, M. H. Buck; second and third, E. G. Roberts.

Silver Seabright Bantam Pullet—First M. H. Buck; second and third, E. G. Roberts; fourth, M. H. Buck.

Buff Cochin Bantam Cock—First, E. G. Roberts; second, F. F. & V. G. Warner.

Buff Cochin Bantam Hen—First, E. G. Roberts; second, F. F. & V. G. Warner; third and fourth, H. H. Rich.

Buff Cochin Bantam Cockerel—First, E. G. Roberts; second, F. F. & V. G. Warner.

Buff Cochin Bantam Pullet—First, E. G. Roberts; second and third, F. F. & V. G. Warner.

B. T. Japanese Cock—First, E. G. Roberts; second, W. T. Wilkinson.

B. T. Japanese Hen—First, E. G. Roberts; second, W. T. Wilkinson.

B T. Japanese Cockerel—First, E. G. Roberts.

B. T. Japanese Pullet—First, E. G. Roberts.

TURKEYS.

EXHIBITORS.

M. H. Buck, Prairie City, Iowa; Hanson Bros., Dean, Iowa; Mrs. F. H. Jewell, Bristow, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin; F. F. & V. G. Warner, Bloomfield, Iowa; J. G. Watts, Berwick, Iowa.

AWARDS.

Bronze Gobbler Old—First, J. C. Watts; second and third, F. F. & V. G. Warner.

Bronze Hen Old—First, F. F. & V. G. Warner; second, J. C. Watts; third, F. F. & V. G. Warner.

Bronze Gobbler Young—First and second, F. F. & V. G. Warner.

Bronze Hen Young—First and second, F. F. & V. G. Warner.

White Holland Gobbler Old—First, Mrs. F. H. Jewell; second, Hanson Bros.; third, M. H. Buck.

White Holland Gobbler Young—First, F. F. & V. G. Warner.

White Holland Hen Young—First, F. F. & V. G. Warner.

Narragansett Gobbler Old—First, E. G. Roberts.

Narragansett Hen Old—First, E. G. Roberts.

Narragansett Cobbler Young—First, M. H. Buck; second, E. G. Roberts.

Narragansett Hen Young—First, M. H. Buck; second, E. G. Roberts.

GEESE.

EXHIBITORS.

Floyd Brollier, Stuart, Iowa; M. H. Buck, Prairie City, Iowa; Hanson Bros., Dean, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin; Harry H. Wheeler, Elburn, Illinois.

AWARDS.

Toulouse Gander Old—First, E. G. Roberts; second, Floyd Brollier.

Toulouse Gander Young—First, E. G. Roberts; second, Floyd Brollier; third and fourth, Hanson Bros.

Toulouse Goose Old—First, E. G. Roberts; second, Floyd Brollier.

Toulouse Goose Young—First, E. G. Roberts; second, Floyd Brollier; third and fourth, Hanson Bros.

Embden Gander Old—First, E. G. Roberts; second, Harry H. Wheeler.

Embden Gander Young—First, Floyd Brollier.

Embden Goose Old—First, E. G. Roberts; second, Harry H. Wheeler; third, Floyd Brollier.

Embden Goose Young—First, Floyd Brollier.

DUCKS.

EXHIBITORS.

Floyd Brollier, Stuart, Iowa; M. H. Buck, Prairie City, Iowa; Mrs. F. C. Ericksen, Reinbeck, Iowa; Hanson Bros., Dean, Iowa; Geo. L. Marsh, Waterloo, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin; F. F. & V. G. Warner.

AWARDS.

Aylesbury Drake Old—First, E. G. Roberts.

Aylesbury Drake Young—First, E. G. Roberts.

Aylesbury Duck Old—First, E. G. Roberts.

Aylesbury Duck Young—First, E. G. Roberts.

Pekin Drake Old—First, F. F. & V. G. Warner.

Pekin Drake Young—First, E. G. Roberts; second and third, F. F. & V. G. Warner; fourth, Hanson Bros.

Pekin Duck Old—First, Mrs. F. C. Ericksen; second and third, F. F. & V. G. Warner.

Pekin Duck Young—First, Mrs. F. C. Ericksen; second and third, F. F. & V. G. Warner; fourth, Hanson Bros.

Rouen Drake Old—First, E. G. Roberts.

Rouen Drake Young—First, E. G. Roberts.

Rouen Duck Old—First, E. G. Roberts.

Rouen Duck Young—E. G. Roberts.

White Muscovey Drake Old—First, M. H. Buck; second, E. G. Roberts.

White Muscovey Drake Young—First, E. G. Roberts.

White Muscovey Duck Old—First, E. G. Roberts; second, M. H. Buck.

White Muscovey Duck Young—First, E. G. Roberts.

Colored Muscovey Drake Old—First, E. G. Roberts; second, M. H. Buck.

Colored Muscovey Drake Young—First, E. G. Roberts; second, M. H. Buck.

Colored Muscovey Duck Old—First, E. G. Roberts; second, M. H. Buck.

Colored Muscovey Duck Young—First, E. G. Roberts; second, M. H. Buck.

BREEDING PENS.

AWARDS.

B. P. Rock Fowls—First, S. H. Page; second, M. H. Buck; third, G. W. Stout; fourth, F. W. Johnson.

B. P. Rock Chicks—First, G. W. Stout; second and third, S. H. Page; fourth, W. A. Hartman.

Buff P. Rock Fowls—First, H. H. Rich; second, M. H. Buck; third, H. H. Rich.

Buff P. Rock Chicks—First and second, H. H. Rich; third, M. H. Buck.

White P. Rock Fowls—First, Chas. A. Waymen; second, Chas. Scroufe; third, Hunkydory Farm.

White P. Rock Chicks—First, F. H. Hollway; second, Chas. A. Waymen; third, W. T. Wilkinson; fourth, Chas. Scroufe.

Silver Wyandotte Fowls—First, Walter Perkins; second, F. F. & V. G. Warner.

Silver Wyandotte Chicks—First, F. F. & V. G. Warner; second, John Duff; third, Walter Perkins.

Golden Wyandotte Fowls—First, F. F. & V. G. Warner; E. G. Roberts; third, Peterson Bros.

Golden Wyandotte Chicks—First, Peterson Bros.; second, F. F. & V. G. Warner.

White Wyandotte Fowls—First, Geo. L. Marsh; second, M. H. Buck; third, Mrs. N. B. Ashby; fourth, F. F. & V. G. Warner.

White Wyandotte Chicks—First, Mrs. N. B. Ashby; second, North Hill Poultry Farm.

Buff Wyandotte Fowls—First, A. E. Goodman; second, F. F. & V. G. Warner; third, E. G. Roberts.

Buff Wyandotte Chicks—First, F. F. & V. G. Warner; second, C. J. Fisher.

Partridge Wyandotte Fowls—First, Dr. N. E. Meghill; second, F. F. & V. G. Warner; third, A. B. Adams.

Partridge Wyandotte Chicks—Dr. N. E. Meghill; second, F. F. & V. G. Warner.

S. P. Wyandotte Fowls—First, E. G. Roberts.

R. C. R. I. Red Chicks—First, J. E. Rawson; second, Hanson Bros.; third, Mrs. O. B. Hudson.

S. C. R. I. Red Fowls—First, J. C. Mares.

S. C. R. I. Red Chicks—First, J. C. Mares; second, Elliott Purmort.

Light Brahma Fowls—First Dr. N. E. Meghill; second, E. G. Roberts; third, J. R. Hoover & Sons; fourth, Dr. H. E. Day.

Light Brahma Chicks—First, Dr. N. E. Meghill; second, R. T. Cameron.

Dark Brahma Fowls—First, M. H. Buck.

Dark Brahma Chicks—First, M. H. Buck.

Buff Cochin Fowls—First, Dr. L. D. Carpenter; second, E. G. Roberts; third, J. R. Hoover & Sons; fourth, Floyd Brollier.

Buff Cochin Chicks—First, F. W. Johnson; second, Floyd Brollier.

Partridge Cochin Fowls—First, Mrs. E. M. Brinckler; second, M. H. Buck.

Partridge Cochin Chicks—First, E. G. Roberts; second, Mrs. E. M. Brinckler.

Buff Orpington Fowls—First, Dr. H. E. Day; second, J. R. Hoover & Sons; third, D. M. Palmer.

Buff Orpington Chicks—First, F. M. Molby; second, D. M. Palmer; third, Ewing Poultry Farm; fourth, Floyd Brollier.

Black Langshan Fowls—First, Walter Perkins; second, E. G. Roberts; third, R. E. West; fourth, F. M. Ziegler & Son.

Black Langshan Chicks—First, R. E. West; second, F. M. Ziegler & Son.

S. C. White Leghorn Fowls—First, E. G. Roberts; second, Walter Perkins; third, Barker Bros.; fourth, Peterson Bros.

S. C. White Leghorn Chicks—First, E. G. Roberts; second, Barker Bros.; third, Peterson Bros.

R. C. White Leghorn Fowls—First, John D. Reeler; second, M. H. Buck; third, Mrs. S. P. Rogers.

R. C. White Leghorn Chicks—First, J. L. Moore; second, John D. Reeler.

S. C. Brown Leghorn Fowls—First, Wes Patterson; second and third, W. O. Coon; fourth, F. W. Johnson.

S. C. Brown Leghorn Chicks—First, Wes Patterson; second, A. E. Banta; third, M. H. Buck; fourth, Peterson Bros.

R. C. Brown Leghorn Fowls—First, M. H. Buck; second, Barker Bros.

R. C. Brown Leghorn Chicks—First, Barker Bros.

Black Minorca Fowls—First, E. G. Roberts.

Black Minorca Chicks—First, J. W. Rodebaugh.

S. S. Hamburg Fowls—First, Miss L. Cook.

S. S. Hamburg Chicks—First, Miss L. Cook; second, Osborn Bros.

Golden Seabright Bantam Fowls—First, E. G. Roberts; second, J. L. Moore.

Golden Seabright Bantam Chicks—First, M. H. Buck; second, E. G. Roberts; third, J. L. Moore.

Buff Cochin Bantam Fowls—First, E. G. Roberts; second, H. H. Rich.

Buff Cochin Bantam Chicks—First, M. H. Buck.

PIGEONS.

EXHIBITORS.

M. H. Buck, Prairie City, Iowa; W. Mat Head, Jefferson, Iowa; Hunkydory Farm, Pella, Iowa; Peterson Bros., Indianola, Iowa; Everett Sherwood, Des Moines, Iowa.

AWARDS.

Pair Homing Pigeons—First, Peterson Bros.; second, W. Mat Head; third, Peterson Bros.

Pair Fantail Pigeons—First and second, Everett Sherwood; third and fourth, W. Mat Head.

Pair Swellow Pigeons—First, W. Mat Head.

Pair Tumbler Pigeons—First, W. Mat Head.

Pair Turbit Pigeons—First, Peterson Bros.

SCORING IN BOYS' LIVE STOCK AND CORN JUDGING CONTEST, IOWA STATE FAIR, 1907, FOR IOWA STATE COLLEGE SCHOLARSHIP.

Rank	Name	Address	Herefords—100	Short horns—100	Duroc-Jerseys—100	Poland-Chinas—100	Percherons—100	Standard bred—100	Total live stock—possible 200	Corn totals—possible 200	Grand total—possible 800
1	**Howard Vaughn**	Marion	91	85	90	82	78	80	506	173½	579½
2	Carl N. Kennedy	Ankeny	78	58	82	76	65	48	407	123½	530½
3	Ivan O. Hasbrouck	Humeston	74	68	84	70	63	56	415	108½	523½
4	Willie Lynes	Plainfield	84	53	58	56	75	80	406	112½	518½
5	J. B. Mitchell	Farragut	92	45	66	74	36	59	372	136½	508½
6	Albert W. Weston	Audubon	90	67	58	51	76	53	395	102½	497½
7	Roy A. Wood	Soldier	86	52	55	66	64	62	385	109	494
8	Carl E. Phillips	Centerville	90	48	72	28	34	68	340	147	487
9	Paul C. Taff	Panora	32	87	72	65	54	49	359	124½	483½
10	Robert Wallace Leffler	Stockport	80	72	60	41	46	55	354	124	478
11	C. R. Hutcheson	West Branch	72	59	64	72	39	59	365	113	478
12	James C. Nell	Arthur	69	82	33	50	55	72	361	116	477
13	Ryle McKee	Indianola	35	77	57	70	74	52	365	106	471
14	Harley Walker	Swan	80	61	68	44	65	46	364	104	468
15	John Hartwell	Tipton	85	70	68	52	39	49	363	99½	462½
16	Bonar McKee	Indianola	64	43	63	76	47	53	346	113	459
17	Earl Escher	Tipton	66	80	47	44	56	46	339	108½	447½
18	Clarke Geo. Terrell	Montezuma	68	74	54	47	66	44	353	84	437
19	Edmund Hanson	Dean	35	50	55	47	74	53	314	119½	433½
20	Elvin L. Quaife	Ionia	54	49	62	45	59	52	321	105	426
21	Lloyd Eveland	Jamaica	45	78	50	58	41	52	324	101	425
22	Loren L. Van Ginkle	Des Moines	54	79	48	30	46	52	309	110	419
23	Charles Walter	Mitchellville	67	44	52	42	46	50	301	117	418
24	Harral A. Longworth	Polk City	35	37	78	38	63	49	300	112	412
25	Forrest Fraseur	Tipton	67	52	85	46	38	54	342	65½	407½
26	Byron Ralph Snider	Abingdon	52	28	35	26	80	76	297	97	394
27	Roy Buckley	Monroe	59	58	50	41	26	72	309	71½	380½
28	G. Glen Jones	Marion	91	37	68	29	28	57	310	63	373
29	Lester Cessford	Tipton	69	60	44	38	34	49	294	69	363
30	Leonard Kennedy	Rolfe	32	45	48	37	49	46	257	88½	345½
31	Joseph Blumer	Wheatland	48	43	35	26	53	46	251	93	344
32	John A. Vader	Pocahontas	62	57	55	42	36	50	302	37½	339½
33	J. M. Hales	Keasauqua	33	47	45	33	34	54	246	90½	336½

Per cent of highest, 72.4.
Per cent of lowest, 42.1.

J. A. McLEAN,
Superintendent of Contest.

SCORING IN GIRLS' COOKING CONTEST, IOWA STATE FAIR, 1907, FOR IOWA STATE COLLEGE SCHOLARSHIP.

Rank	Name	Address	Method 20		Finished Product 40		40	100
			Bis.	Steak	Bis.	Steak	Reasons	Average
1	Florence Dunham	Ames	8	9 (17)	16	18 (34)	40	91
2	Margaret J. Gray	Ames	8	9 (17)	17	17 (34)	38	89
3	Velda J. Wilson	Sigourney	7	8 (15)	18	18 (36)	37	88
4	Emma Tellier	Humboldt	8	8 (16)	17	16½(33½)	38	87½
5	Edith C. Bliss	Diagonal R. No. 1	8	7 (15)	18	17½(35½)	34	84½
6	Nellie R. Patterson	Burt	5	8 (13)	14	17 (31)	30	74
7	Grace R. Scott	Griswold	6	6 (12)	14	17 (31)	30	73
8	Gladys Gormley	Bondurant	5	6 (11)	13	15 (28)	30	69
9	Mary Day	Afton	7	7 (14)	13	18 (31)	20	65
10	Jessie Mae Roberts	Luther	6	7 (13)	13	15 (28)	20	61

MISS MARY RAUSCH,
Superintendent of Contest.

Winners of the Scholarships in the boys corn and stock judging cogtest and girls cooking contest at the Iowa State Fair and Exposition 1907.

GIRLS—1. Florence Dunham Ames, first. 5. Margaret J. Gray, Ames, second.

BOYS—6. Howard Vaughn, Marion, first. 4. Carl N. Kennedy, Ankney, second. 2. Ivan O. Hasbrouck, Humeston, third. 3. Willie Lynes, Plainfield, fourth.

AWARDS—MATURE CORN SHOW

IN CONNECTION WITH

State Farmer's Institute and Agricultural Convention

DES MOINES, DECEMBER 10-11, 1907

NORTHERN DISTRICT:

Division No. 1—Ten Ears Yellow Corn—$10; $8; $6; $4.

First, Geo. M. Allee, Newell; second, Victor Felter, Quinby; third, J. W. Eral, Pocahontas; fourth, A. J. Doore, Greene.

Division No. 2—One Ear Yellow Corn—$6; $5; $4; $3.

First, H. L. Felter, Washta; second, J. J. Allee, Newell; third, Geo. M. Allee, Newell; fourth, J. W. Eral, Pocahontas.

Division No. 3—Ten Ears White Corn—$10; $8; $6; $4.

First, Henry George, West Union; second, A. J. Doore, Greene; third, W. P. Dawson, Quinby; fourth, T. F. Cook, Durango.

Division No. 4—One Ear White Corn—$6; $5; $4.

First, Henry George, West Union; second, D. McArthur, Mason City; third, T. F. Cook, Durango.

CENTRAL DISTRICT:

Division No. 5—Ten Ears Yellow Corn—$10; $8; $6; $4; $4; $2; $2; $2.

First, R. H. Ghormely, Bondurant; second, Edison Bennett, Ames; third, O. J. Easton, Whiting; fourth, O. Osburn, Maxwell; fifth, Asa Turner, Farrar; sixth, D. G. Wilson, Panora; seventh, Ray Bennett, Ames; eighth, A. L. Garrett, Altoona.

Division No. 6—One Ear Yellow Corn—$6; $5; $4; $4; $2; $2; $2.

First, C. D. Schaal, Polk City; second, Fred Hethershaw, Des Moines; third, Edison Bennett, Ames; fourth, L. Brier, Des Moines; fifth, J. J. Proudfet, Altoona; sixth, E. W. Wilson, Panora; seventh, O. J. Easton, Whiting.

Division No. 7—Ten Ears White Corn—$10; $8; $6; $4; $2; $2.

First, Chas. O. Garrett, Mitchellville; second, C. O. Garrett, Adelphi; third, N. J. Harris, Des Moines; fourth, J. B. Cook, Epworth; fifth, H. V. Hethershaw, Des Moines; sixth, F. M. Mercer, Victor.

Division No. 8—One Ear White Corn—$6; $5; $4; $3; $2.

First, C. O. Garrett, Adelphi; second, Chas. O. Garrett, Mitchellville; third, Fred Hethershaw, Des Moines; fourth, D. A. Marts, Polk City; fifth, F. M. Mercer, Victor.

SOUTHERN DISTRICT:

Division No. 9—Ten Ears Yellow Corn—$10; $8; $6; $4; $2.

First, W. A. Hook, Packwood; second, Samuel Shakespear, Lamoni; third, Bill Moyher, Villisca; fourth, Thos. Thompson; Villisca; fifth, M. Shivvers & Son, Knoxville.

Division No. 10—One Ear Yellow Corn—$6; $5; $4; $3; $2.

First and second, J. F. C. Finnell, Hamburg; third, W. A. Hook, Packwood; fourth, J. C. Frame, Salem; fifth, Ned G. Olliver, Packwood.

Division No. 11—Ten Ears White Corn—$10; $8; $6; $4; $2.

First, Lenus Hagglund, Essex; second, T. D. White, Oskaloosa; third, Eli Wright, Winterset; fourth, J. C. Frame, Salem; fifth, J. L. Crawford, Winterset.

Division No. 12—One Ear White Corn—$6; $5; $4; $3.

First, Charley Willhoit, Oskaloosa; second, J. C. Frame, Salem; third, W. A. Hook, Packwood; fourth, Lenus Hagglund, Essex.

SWEEPSTAKES FOR STATE:

Ten Ears Yellow Corn—$5. Won by W. A. Hook, Packwood.
One Ear Yellow Corn—$5. Won by J. F. C. Finnell, Hamburg.
Ten Ears White Corn—$5. Won by Lenus Hagglund, Essex.
One Ear White Corn—$5. Won by C. O. Garrett, Adelphi.

GRAND SWEEPSTAKES:

Ten Ears any Variety—$5. Won by W. A. Hook, Packwood.
One Ear any Variety—$5. Won by J. F. C. Finnell, Hamburg.

PART X.

Papers on Live Stock, Agricultural and Miscellaneous Topics

FROM

BULLETINS, AGRICULTURAL PRESS

AND

Papers Read Before County Farmers Institutes

THE MAN WHO WORKS WITH HIS HANDS.

ADDRESS OF PRESIDENT ROOSEVELT AT THE SEMI-CENTENNIAL CELEBRATION OF THE FOUNDING OF AGRICULTURAL COLLEGES IN THE UNITED STATES, AT LANSING, MICHIGAN, MAY 31, 1907.

The fiftieth anniversary of the founding of this college is an event of national significance, for Michigan was the first state in the Union to found this, the first agricultural college in America. The nation is to be congratulated on the fact that the congress at Washington has repeatedly enacted laws designed to aid the several states in establishing and maintaining agricultural and mechanical colleges. I greet all such colleges, through their representatives who have gathered here today, and bid them godspeed in their work. I no less heartily invoke success for the mechanical and agricultural schools; and I wish to say that I have heard particularly good reports of the Minnesota Agricultural High School for the way in which it sends its graduates back to the farms to work as practical farmers.

OUR EDUCATIONAL SYSTEM AND WHAT IT LACKS.

As a people there is nothing in which we take a juster pride than our educational system. It is not our boast that every boy or girl has the chance to get a school training; and we feel it is a prime national duty to furnish this training free, because only thereby can we secure the proper type of citizenship in the average American. Our public schools and our colleges have done their work well, and there is no class of our citizens deserving of heartier praise than the men and women who teach in them.

Nevertheless, for at least a generation we have been waking to the knowledge that there must be additional education beyond that provided in the public school, as it is managed today. Our school system has hitherto been well-nigh wholly lacking on the side of industrial training, of the training which fits a man for the shop and the farm. This is a most serious lack, for no one can look at the peoples of mankind as they stand at present without realizing that industrial training is one of the most potent factors in national development. We of the United States must develop a system under which each individual citizen shall be trained so as to be effective individually as an economic unit, and fit to be organized with his fellows so that he and they can work in efficient fashion together. This question is vital to our future progress, and public attention should be focused upon it. Surely it is eminently in accord with the principles of our democratic life that we should furnish the highest average industrial training for the ordinary skilled workman. But it is a curious thing that in industrial training we have tended to devote our energies to producing high-grade men at the top rather than in the ranks. Our engineering schools, for instance, compare favorably with the best in Europe, whereas we have done almost nothing to equip the private soldiers of the industrial army—the mechanic, the metal-worker, the carpenter. Indeed, too often our schools train away from the shop and the forge; and this fact, together with the abandonment of the old apprentice system, has resulted in such an absence of facilities for providing trained journeymen that in many of our trades almost all the recruits among the workmen are foreigners. Surely this means that there must be some systematic method provided for training young men in the trades, and that this must be co-ordinated with the public school system. No industrial school can turn out a finished journeyman; but it can furnish the material out of which a finished journeyman can be made, just as an engineering school furnishes the training which eables its graduates speedily to become engineers.

We hear a great deal of the need of protecting our workingmen from competition with pauper labor. I have very little fear of the competition of pauper labor. The nations with pauper labor are not the formidable industrial competitors of this country. What the American workingman has to fear is the competition of the highly skilled workingman of the countries of greatest industrial efficiency. By the tariff and by our immigration laws we can always protect ourselves against the competition of pauper labor here at home; but when we contend for the markets of the world we can get no protection, and we shall then find that our most formidable competitors are the nations in which there is the most highly developed business ability, the most highly developed industrial skill; and these are the qualities which we must ourselves develop.

DIGNITY AND IMPORTANCE OF LABOR.

We have been fond as a nation of speaking of the dignity of labor, meaning thereby manual labor. Personally I don't think that we begin to understand what a high place manual labor should take; and it never can take this high place unless it offers scope for the best type of man. We have tended to regard education as a matter of the head only, and the result is that a great many of our people, themselves the sons of men who worked with their hands, seem to think that they rise in the world if they get into a position where they do no hard manual work whatever; where their hands will grow soft, and their working clothes will be kept clean. Such a conception is both false and mischievous. There are, of course, kinds of labor where the work must be purely mental, and there are other kinds of labor where, under existing conditions, very little demand indeed is made upon the mind, though I am glad to say that I think the proportion of men engaged in this kind of work is diminishing. But in any healthy community, in any community wit hthe great solid qualities which alone make a really great nation, the bulk of the people should do work which makes demands upon both the body and the mind. Progress can not permanently consist in the abandonment of physical labor, but in the development of physical labor so that it shall represent more and more the work of the trained mind in the trained body. To provide such training, to encourage in every way the production of the men whom it alone can produce, is to show that as a nation we have a true conception of the dignity and importance of labor. The calling of the skilled tiller of the soil, the calling of the skilled mechanic, should alike be recognized as professions, just as emphatically as the callings of lawyer, of doctor, of banker, merchant or clerk. The printer, the electrical worker, the house painter, the foundry man, should be trained just as carefully as the stenographer or the drug clerk. They should be trained alike in head and in hand. They should get over the idea that to earn twelve dollars a week and call it "salary" is better than to earn twenty-five dollars a week and call it "wages." The young man who has the courage and the ability to refuse to enter the crowded field of the so-called professions and to take to constructive industry is almost sure of an ample reward in earnings, in health, in opportunity to marry early, and to establish a home with reasonable freedom from worry. We need the training, the manual dexterity, and industrial intelligence which can be best given in a good agricultural, or building, or textile, or watch-making, or engraving, or mechanical school. It should be one of our prime objects to put the mechanic, the wage-worker who works with his hands, and who ought to work in a constantly larger degree with his head, on a higher plane of efficiency and reward, so as to increase his effectiveness in the economic world, and therefore the dignity, the remuneration and the power of his position in the social world. To train boys and girls in merely literary accomplishments to the total exclusion of industrial, manual, and technical training tends to unfit them for industrial work; and in real life most work is industrial.

The problem of furnishing well-trained craftsmen, or rather journeymen fitted in the end to become such, is not simple—few problems are simple in the actual process of their solution—and much care and forethought and practical common sense will be needed, in order to work it out in a fairly satisfactory manner. It should appeal to all our citizens.

I am glad that societies have already been formed to promote industrial education, and that their membership includes manufacturers and leaders of labor unions, educators and publicists, men of all conditions who are interested in education and in industry. It is such co-operation that offers most hope for a satisfactory solution of the question as to what is the best form of industrial school, as to the means by which it may be articulated with the public school system, and as to the way to secure for the boys trained therein the opportunity to acquire in the industries the practical skill which alone can make them finished journeymen.

THE FARMER IN RELATION TO THE WELFARE OF THE WHOLE COUNTRY.

There is but one person whose welfare is as vital to the welfare of the whole country as is that of the wage-worker who does manual labor; and that is the tiller of the soil—the farmer. If there is one lesson taught by history it is that the permanent greatness of any state must ultimately depend more upon the character of its country population than upon anything else. No growth of cities, no growth of wealth, can make up for a loss in either the number or the character of the farming population. In the United States more than in almost any other country, we should realize this and should prize our country population. When this nation began its independent existence it was as a nation of farmers. The towns were small and were for the most part mere sea coast trading and fishing ports. The chief industry of the country was agriculture, and the ordinary citizen was in some way connected with it. In every great crisis of the past a peculiar dependence has had to be placed upon the farming population; and this dependence has hitherto been justified. But it can not be justified in the future if agriculture is permitted to sink in the scale as compared with other employments. We can not afford to lose that pre-eminently typical American, the farmer who owns his own farm.

ECONOMIC AND SOCIAL FACTORS AFFECTING RURAL POPULATIONS.

Yet it would be idle to deny that in the last half century there has been in the eastern half of our country a falling off in the relative condition of the tillers of the soil, although signs are multiplying that the nation has waked up to the danger and is preparing to grapple effectively with it. East of the Mississippi and north of the Ohio and the Potomac there has been on the whole an actual shrinkage in the number of the farming population since the civil war. In the states of this section there has been a growth of population—in some an enormous growth—but the growth has taken place in the cities, and especially in the larger cities. This has been due to certain economic factors, such as the extension of railroads, the development of machinery, and the openings for industrial success afforded by the unprecedented growth of cities. The increased facility of communication has resulted in the withdrawal from rural communities of most of the small, widely distributed manufacturing and commercial operations of former times, and the substitution therefor of the centralized commercial and manufacturing industries of the cities.

The chief offset to the various tendencies which have told against the farm has hitherto come in the rise of the physical sciences and their application to agricultural practices or to the rendering of country conditions more easy and pleasant. But these countervailing forces are as yet in their infancy. As compared with a few decades ago, the social or community life of country people in the east compares less well than it formerly did with that of the dwellers in cities. Many country communities have lost their social coherence, their sense of community interest. In such communities the country church, for instance, has gone backward both as a social and a religious factor. Now, we can not too strongly insist upon the fact that it is quite as unfortunate to have any social as any economic falling off. It would be a calamity to have our farms occupied by a lower type of people than the hard-working, self-respecting, independent, and essentially manly men and womanly women who have hitherto constituted the most typically American, and on the whole the most valuable, element in our entire nation. Ambitious native-born young men and women who now tend away from the farm must be brought back to it, and therefore they must have social as well as economic opportunities. Everything should be done to encourage the growth in the open farming country of such institutional and social movements as will meet the demand of the best type of farmers. There should be libraries, assembly halls, social organizations of all kinds. The school building, and the teacher in the school building should, throughout the country districts, be of the very highest type, able to fit the boys and girls not merely to live in, but thoroughly to enjoy and to make the most of the country. The country church must be revived. All kinds of agencies, from rural free delivery to the bicycle and the telephone, should be utilized to the utmost; good roads should be favored; everything should be done to make it easier for the farmer to lead the most active and effective intellectual, political, and economic life.

There are regions of large extent where all this, or most of this, has already been realized; and while this is perhaps especially true of great tracts of farming country west of the Mississippi, with some of which I have a fairly intimate personal knowledge, it is no less true of other great tracts of country east of the Mississippi. In these regions the church and the school flourish as never before; there is a more successful and more varied farming industry; the social advantages and opportunities are greater than ever before; life is fuller, happier, more useful; and though the work is more effective than ever, and in a way quite as hard, it is carried on so as to give more scope for well-used leisure. My plea is that we shall all try to make more nearly universal the conditions that now obtain in the most favored localities.

PROGRESS IN AGRICULTURAL SCIENCE.

Nothing in the way of scientific work can ever take the place of business management on a farm. We ought all of us to teach ourselves as much as possible; but we can also all of us learn from others; and the farmer can best learn how to manage his farm even better than he now does by practice, under intelligent supervision, on his own soil in such a way as to increase his income. This is the kind of teaching which has been carried on in Texas, Louisiana, and Arkansas by Doctor Knapp, of the national department of agriculture. But much has been accomplished by the growth of what is broadly designated as agricultural science. This has been developed with remarkable rapidity during the last quarter of a century, and the benefit to agriculture has been great. As was inevitable, there was much error and much repetition of work in the early application of money to the needs of agricultural colleges and experiment stations alike by the nation and the several states. Much has been accomplished; but much more can be accomplished in the future. The prime need must always be for real research, resulting in scientific conclusions of proved soundness. Both the farmer and the legislature must beware of invariably demanding immediate returns from investments in research efforts. It is probably one of our faults as a nation that we are too impatient to wait a sufficient length of time to accomplish the best results; and in agriculture effective research often, although not always, involves slow and long-continued effort if the results are to be trustworthy. While applied science in agriculture as elsewhere must be judged largely from the standpoint of its actual return in dollars, yet the farmers no more than anyone else can afford to ignore the large results that can be enjoyed because of broader knowledge. The farmer must prepare for using the knowledge that can be obtained through agricultural colleges by insisting upon a constantly more practical curriculum in the schools in which his children are taught. He must not lose his independence, his initiative, his rugged self-sufficiency; and yet he must learn to work in the heartiest co-operation with his fellows.

EDUCATIONAL AND RESEARCH WORK OF THE DEPARTMENT OF AGRICULTURE.

The corner stones of our unexampled prosperity are, on the one hand, the production of raw material, and its manufacture and distribution on the other. These two great groups of subjects are reprsented in the national government principally by the departments of agriculture and of commerce and labor. The production of raw material from the surface of the earth is the sphere in which the department of agriculture has hitherto achieved such notable results. Of all the executive departments there is no other, not even the postoffice, which comes into more direct and beneficient contact with the daily life of the people than the department of agriculture, and none whose yield of practical benefits is greater in proportion to the public money expended.

But great as its services have been in the past, the department of agriculture has a still larger field of usefulness ahead. It has been dealing with growing crops. It must hereafter deal also with living men. Hitherto agricultural research, instruction and agitation have been directed almost exclusively toward the production of wealth from the soil. It is time to adopt in addition a new point of view. Hereafter another great task before the national department of agriculture and the similar agencies of the various states must be to foster agriculture for its social results, or, in other words, to assist in bringing about the best kind of life on the farm for the sake of producing the best kind of men. The government must recognize the far-reaching importance of the study and treatment of the problems of farm life alike from the social and the economic standpoints; and the federal and state department of agriculture should co-operate at every point.

The farm grows the raw material for the food and clothing of all our citizens; it supports directly almost half of them; and nearly half the children of the United States are born and brought up on farms. How can the life of the farm family be made less solitary, fuller of opportunity, freer from drudgery, more comfortable, happier and more attractive? Such a result is most earnestly to be desired. How can life on the farm be kept on the highest level, and where it is not already on that level, be so improved, dignified and brightened as to awaken and keep alive the pride and loyalty of the farmer's boys and girls, of the farmer's wife, and of the farmer himself? How can a compelling desire to live on the farm be aroused in the children that are born on the farm. All these questions are of vital importance not only to the farmer, but to the whole nation; and the department of agriculture must do its share in answering them.

The drift toward the city is largely determined by the superior social opportunities to be enjoyed there, by the greater vividness and movement of city life. Considered from the point of view of national efficiency, the problem of the farm is as much a problem of attractiveness as it is a problem of prosperity. It has ceased to be merely a problem of growing wheat and corn and cattle. The problem of production has not ceased to be fundamental, but it is no longer final; just as learning to read and write and cipher are fundamental, but are no longer the final ends of education. We hope ultimately to double the average yield of wheat and corn per acre; it will be a great achievement; but it is even more important to double the desirability, comfort and standing of the farmer's life.

We must consider, then, not merely how to produce, but also how production affects the producer. In the past we have given but scant attention to the social side of farm life. We should study much more closely than has yet been done the social organization of the country, and inquire whether its institutions are now really as useful to the farmer as they should be, or whether they should not be given a new direction and a new impulse, for no farmer's life should lie merely within the boundary of his farm. This study must be of the east and the west, the north and the south; for the needs vary from place to place.

First in importance, of course, comes the effort to secure the mastery of production. Great strides toward this end have already been taken over the larger part of the United States; much remains to be done, but much has been done; and the debt of the nation to the various agencies of agricultural improvement for so great an advance is not to be overstated. But we can not halt here. The benefits of high social organization include such advantages as ease of communication, better educational facilities, increased comfort of living, and those opportunities for social and intellectual life and intercourse, of special value to the young people and to the women, which are as yet chiefly to be had in centers of population. All this must be brought within the reach of the farmers who live on the farms, of the men whose labor feeds and clothes the towns and cities.

BENEFITS RESULTING FROM CO-OPERATION.

Farmers must learn the vital need of co-operation with one another. Next to this comes co-operation with the government, and the government can best give its aid through associations of farmers rather than through the individual farmer; for there is no greater agricultural problem than that of delivering to the farmer the large body of agricultural knowledge which has been accumulated by the national and state governments and by the agricultural colleges and schools. Nowhere has the government worked to better advantage than in the south, where the work done by the department of agriculture in connection with the cotton growers of the southwestern states has been phenomenal in its value. The farmers in the region affected by the boll weevil, in the course of the efforts to fight it, have succeeded in developing a most scientific husbandry, so that in many places the boll weevil became a blessing in disguise. Not only did the industry of farming become of very much greater economic value in its direct results, but it became immensely more interesting to thousands of families. The meetings at which the new subjects of interest were discussed grew to have a distinct social value, while with the farmers were joined the merchants and bankers of the neighborhood. It is needless to say that every such successful effort to organize the farmer gives a great stimulus to the admirable educational work which is being done in the southern states, as elsewhere, to prepare young people for an agricultural life. It is greatly to be wished that the communities whence these students are drawn and to which they either return or should return could be cooperatively organized; that is, that associations of farmers could be organized, primarily for business purposes,, but also with social ends in view. This would mean that the returned students from the institutions of technical learning would find their environment prepared to profit to the utmost by the improvements in technical methods which they had learned.

The people of our farming regions must be able to combine among themselves, as the most efficient means of protecting their industry from the highly organized interests which now surround them on every side. A vast field is open for work by co-operative associations of farmers in dealing with the relation of the farm to transportation and to the distribution and manufacture of raw materials. It is only through such combination that American farmers can develop to the full their economic and social power. Combination of this kind has, in Denmark, for instance, resulted in bringing the people back to the land, and has enabled the Danish peasant to compete in extraordinary fashion, not only at home, but in foreign countries, with all rivals.

KIND OF EDUCATION NEEDED.

Agricultural colleges and farmers' institutes have done much in instruction and inspiration; they have stood for the nobility of labor and the necessity of keeping the muscles and the brain in training for industry. They have developed technical departments of high practical value. They seek to provide for the people on the farms an equipment so broad and thorough as to fit them for the highest requirements of our citizenship; so that they can establish and maintain country homes of the best type, and create and sustain a country civilization more than equal to that of the city. The men they train must be able to meet the strongest business competition, at home or abroad, and they can do this only if they are trained, not alone in the various lines of husbandry, but in successful economic management. These colleges, like the state experiment stations, should carefully study and make known the needs of each section, and should try to provide remedies for what is wrong.

The education to be obtained in these colleges should create as intimate relationship as is possible between the theory of learning and the facts of actual life. Educational establishments should produce highly trained scholars, of course; but in a country like ours, where the educational establishments are so numerous, it is folly to think that their main purpose is to produce these highly trained scholars. Without in the least disparaging scholarship and learning—on the contrary, while giving hearty and ungrudging admiration and support to the comparatively few whose primary work should be creative scholarship—it must be remembered that the ordinary graduate of our colleges should be and must be, primarily, a man and not a scholar. Education should not confine itself to books. It must train executive power, and try to create that right public opinion which is the most potent factor in the proper solution of all political and social questions. Book-learning is very important, but it is by no means everything; and we shall never get the right idea of education until we definitely understand that a man may be well trained in book-learning and yet, in the proper sense of the word, and for all practical purposes, be utterly uneducated; while a man of comparatively little book-learning may, nevertheless, in essentials have a good education.

IMPROVEMENT OF CONDITIONS AFFECTING COUNTRY LIFE.

It is true that agriculture in the United States has reached a very high level of prosperity; but we can not afford to disregard the signs which teach us that there are influences operating against the establishment or retention of our country life upon a really sound basis. The overextensive and wasteful cultivation of pioneer days must stop and give place to a more economical system. Not only the physical but the ethical needs of the people of the country districts must be considered. In our country life there must be social and intellectual advantages as well as a fair standard of physical comfort. There must be in the country, as in the town, a multiplication of movements for intellectual advancement and social betterment. We must try to raise the average of farm life, and we must also try to develop it so that it shall offer exceptional chances for the exceptional man.

Of course the essential things after all are those which concern all of us as men and women, no matter whether we live in the town or the country, and no matter what our occupations may be. The root problems are much the same for all of us, widely though they may differ in outward manifestation. The most important conditions that tell for happiness within the home are the same for the town and the country;

and the relations between employer and employee are not always satisfactory on the farm any more than in the factory. All over the country there is a constant complaint of paucity of farm labor. Without attempting to go into all the features of this question I would like to point out that you can never get the right kind, the best kind, of labor if you offer employment only for a few months, for no man worth anything will permanently accept a system which leaves him in idleness for half the year.

A WORD REGARDING THE FARMER'S FAMILY.

And most important of all, I want to say a special word on behalf of the one who is too often the very hardest worked laborer on the farm—the farmer's wife. Reform, like charity, while it should not end at home, should certainly begin there; and the man, whether he lives on a farm or in a town, who is anxious to see better social and economic conditions prevail through the country at large, should be exceedingly careful that they prevail first as regards his own womankind. I emphatically believe that for the great majority of women the really indispensable industry in which they should engage is the industry of the home. There are exceptions, of course; but exactly as the first duty of the normal man is the duty of being the home maker, so the first duty of the normal woman is to be the home keeper; and exactly as no other learning is as important for the average man as the learning which will teach him how to make his livelihood, so no other learning is as important for the average woman as the learning which will make her a good housewife and mother. But this does not mean that she should be an overworked drudge. I have hearty sympathy with the movement to better the condition of the average tiller of the soil, or of the average wageworker, and I have an even heartier sympathy and applause for the movement which is to better the condition of their respective wives. There is plenty that is hard and rough and disagreeable in the necessary work of actual life; and under the best circumstances, and no matter how tender and considerate the husband, the wife will have at least her full share of work and worry and anxiety; but if the man is worth his salt he will try to take as much as possible of the burden off the shoulders of his helpmate. There is nothing Utopian in the movement; all that is necessary is to strive toward raising the average, both of men and women, to the level on which the highest type of family now stands, among American farmers, among American skilled mechanics, among American citizens generally; for in all the world there is no better and healthier home life, no finer factory of individual character, nothing more representative of what is best and most characteristic in American life than that which exists in the higher type of American family; and this higher type of family is to be found everywhere among us, and is the property of no special group of citizens.

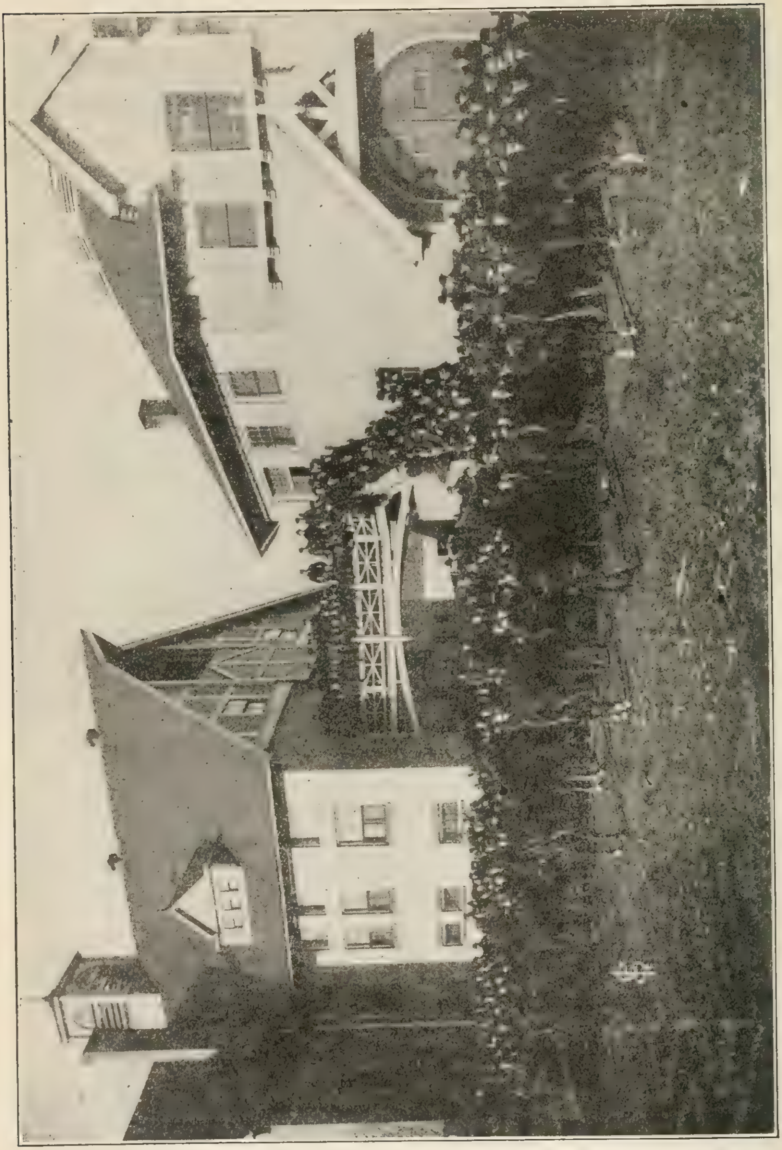
The best crop is the crop of children; the best products of the farm are the men and women raised thereon; and the most instructive and practical treatise on farming, necessary though they be, are no more necessary than the books which teach us our duty to our neighbor, and above all to the neighbor who is of our own household. You young men and women of the agricultural and industrial colleges and schools—and, for that matter, you who go to any college or school—must have some time for light reading; and there is some light reading quite as useful as heavy reading, provided, of course, that you do not read in a spirt of mere vacuity. Aside from the great classics, and thinking only of the many healthy and stimulating books of the day, it is easy to pick out many which can really serve as tracts, because they possess what many avowed tracts and treatises do not, the prime quality of being interesting. You will learn the root principles of self help and helpfulness towards others from "Mrs. Wiggs of the Cabbage Patch," just as much as from any formal treatise on charity; you will learn as much sound social and industrial doctrine from Octave Thanet's stories of farmers and wageworkers as from avowed sociological and economic studies; and I cordially recommend the first chapter of "Aunt Jane of Kentucky" for use as a tract in all families where the men folks tend to selfish or thoughtless or overbearing disregard of the rights of their womenkind.

Do not misunderstand me. I have not the slightest sympathy with those hysterical and foolish creatures who wish women to attain to easy lives by shirking their duties. I have as hearty a contempt for the woman who shirks her duty of bearing and rearing the children, of doing her full housewife's work, as I have for the man who is an idler, who shirks his duty of earning a living for himself and for his household, or who is selfish or brutal toward his wife and children. I believe in the happiness that comes from the performance of duty, not from the avoidance of duty. But I believe also in trying, each of us, as strength is given us, to bear one another's burdens; and this especially in our own homes. No outside training, no co-operation, no government aid or direction can take the place of a strong and upright character; of goodness of heart combined with clearness of head and that strength and toughness of fiber necessary to wring success from a rough work-a-day world. Nothing outside of home can take the place of home. The school is an invaluable adjunct to the home, but it is a wretched substitute for it. The family relation is the most fundamental, the most important of all relations. No leader in church or state, in science or art or industry, however great his achievement, does work which compares in importance with that of the father and the mother, "who are the first of sovereigns and the most divine of priests."

THE TWO WEEKS' ANNUAL SHORT COURSE AT THE IOWA STATE COLLEGE.

A total enrollment of 748 students was registered in the eighth annual short course of the Iowa State College at Ames. This was practically the same number in attendance a year ago. Without a doubt the crowd would have swelled to a larger size if untoward financial conditions had not come upon the whole country just previous to this meeting.

The interest was keen in all branches of agricultural study, with live stock and grain drawing the most devotees, as usual. The dairy course showed a healthy increase over twelve months ago. In place of the



The live stock students at the judging pavilion, in Short Course Iowa State College. Ames, 1908.

special course in horticulture and forestry, which had only a small patronage last year, daily one-hour lectures on these two subjects and the additional subjects of rural engineering and soils were given to all students. This was a good precedent to establish and gave great satisfaction to all, for these industries are really only of minor importance in Iowa. The domestic science registry bespoke 50 present for the two weeks' work along this line. Some of the talks in this department, however, were at times listened to by 200 ladies. The latter branch of the short course is assuming greater interest each year it is offered.

In many ways it was a cosmopolitan assemblage of farmers and their wives, a truly good representation of Iowa agricultural intelligence and enterprise. A growing number of this class of Iowa people encourage this latest Iowa idea with their presence.

To show how the influence of the work is spreading and how the gospel of the short course is expanding throughout the state, it is interesting to note that the most prominent and best farmers of the state come back each year with a party or club of their neighbors. These men devote themselves faithfully and earnestly to the work in hand. Men who have amassed fortunes are among this number and they emphatically state that the increased knowledge that they gather enables them not only to direct their work far more profitably, but to add to life's duties a tinge of pleasure.

The class of men found at the annual short course are of the type which has been responsible for the past development of the farm interests of the state. Engage them in conversation for even a few minutes and it will be discovered that they are the men who stand out as safe, energetic and honored citizens, actuated by a desire to help their neighbors as well as themselves. They extend their influence in a modest way in their own communities and as a whole they are of the type of citizens who are constantly striving to leave the world better for their having lived and been a factor in its work.

An outstanding good collection of live stock and small grains, a practical creamery course and a daily evening program of well known agricultural speakers were the attractions which drew the large crowd. The attendance gathered from all parts of the State and was most noteworthy for the large number of young men. This was perhaps due to the competition for the Armour and Rosenbaum scholarships, which were competed for at the close of the short course by 52 of the young men who were under 21 years of age. A sprinkling of second year students and of graduates of the regular four-year course was also noticed. Several men with degrees from other institutions were present. No matter what the class, condition or age of the short course students, they took great interest in studying what had been assembled in Ames for their benefit in the way of winners of America's best show rings and the best grains of the great expositions. Dean Curtiss had arranged a practical course in agriculture and his efforts were well repaid by a goodly crowd.

Naturally the greatest emphasis was placed upon live stock and this year the work in judging breeding and feeding was at high tide. Splendid animals were assembled by Professor W. J. Kennedy and as a whole they probably will rank as the best live stock exhibit that ever graced a winter school. The first work of this cource was with 29 sheep picked out of a flock of 1,100 owned by Chandler Bros. The college flock was also drawn upon for types in the wool and mutton work. An outstanding individual in this collection was a champion wether from the herd of King Edward VII., which later in the meat demonstration was pronounced by John Gosling as the model animal.

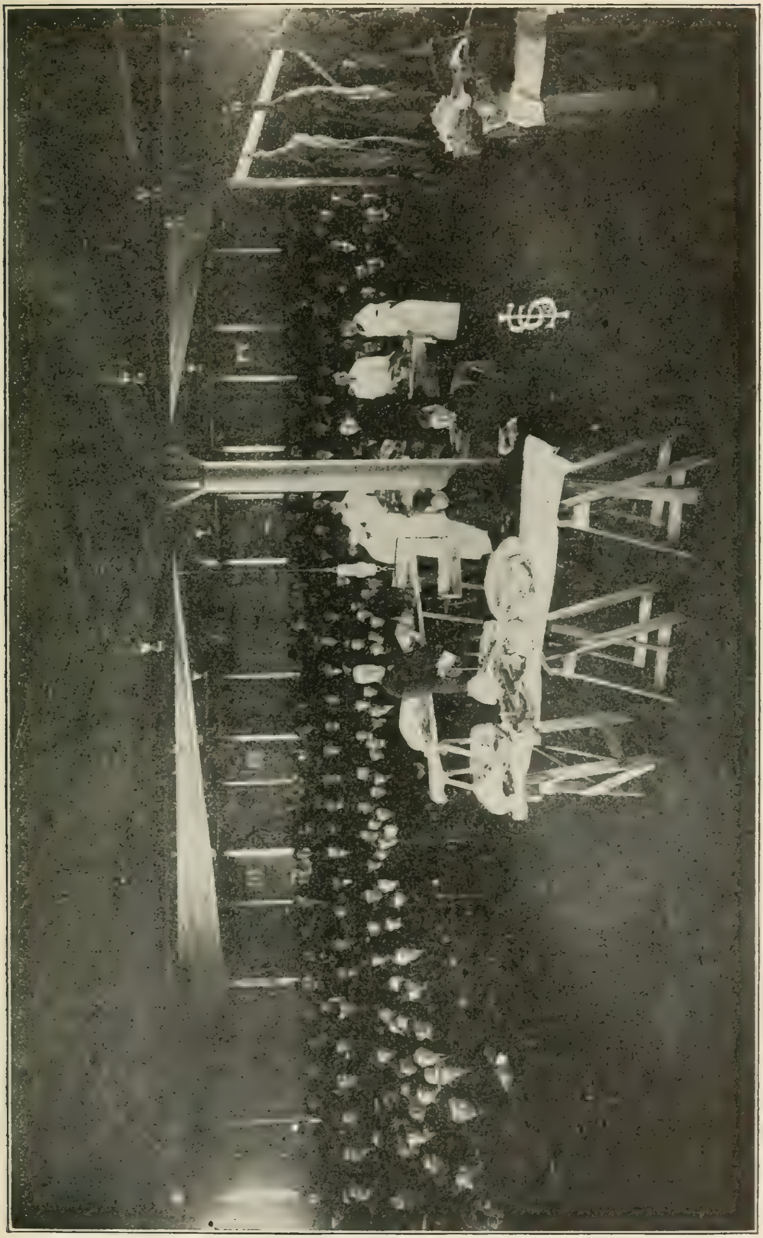
The cattle exhibit, in addition to animals from the college herd, was assisted by the presence of Short-horns from Flynn Bros. and Mansfield & Harmon. The Angus classes were strengthened by nine individuals from the herd of O. V. Battles. The dairy classes were handled by Professor H. G. Van Pelt and consisted of lectures and demonstrations of the different dairy breeds.

This year the horses represented more breeds than ever before and there was every type of desirable western animal. The college furnished the draft mares from its own stables—Clydesdales and Shires and the Clydesdale stallion Kuroki. He was supported by stallions of the Percheron, Belgian, German Coach and Hackney breeds from the barns of A. B. Holbert.

Three of the prize winning Berkshire barrows at the International had been returned for short course work and furnished good classes of typical fat hogs. Breeding classes of Duroc Jersey sows, Poland-China sows, Berkshire sows and Chester White gilts were also considered. Yorkshires were used to emphasize the bacon type, which is not so well known in Iowa as is the fat hog type.

In the meat demonstration John Gosling dwelt on the merits of Iowa fattened beef, pork and mutton. Little Jack, a Hereford-Angus cross shown at Chicago, was the principal exhibit in this class. In contrast to his well-proportioned lean and beautifully marbled cuts were cuts from the same parts of a medium good steer and a canner. Mr. Gosling pronounced Little Jack one of the finest quality animals on foot that he ever saw and the slaughter proved that his judgment was good. The educational features of this demonstration cannot be overlooked. As an aid to both the breeder and feeder it has no equal and the work of John Gosling has made many a man a better stock judge and many a feeder a wiser man. A very interesting feature was the lectures of Dr. J. H. McNeil and his assistants on conformation and soundness, diseases of animals and general bacterial diseases.

The pre-eminence of Iowa as a corn state was evident as one looked upon the students who were busying themselves with learning more of this great cereal. The second week was given to the same kind of work with small grains. Lectures on alfalfa, Mendel's law, eradication of weeds, seed testing and handling of small crops varied the laboratory work in this course. Professor M. L. Bowman, assisted by Professor B. W. Crossley and the members of the two champion grain judging teams, did the teaching work in this course. The 400 members of the Iowa Corn Growers' Association, which holds its annual meeting at Ames durign the short course, were the backbone of the agronomy crowd. This association distributed $5,000 in prize money. The grand championship for ten ears was won by C. R. Bishop, an amateur exhibitor, who also captured the Whiting trophy. The grand champion single ear, shown by



Class in meat demonstration at short course Iowa State College 1908. Ames.

J. A. Mason, won the Allee trophy, a $150 painting by Montgomery. At the annual auction sale of this association something over $1,000 was taken in for seed corn values. While no extraordinary prices were received for any single ear exhibits, the grand champion single ear bringing only $26, against $150 last year, the steady uniformity of prices given for the large exhibits of seed corn was the feature which brought a steady level of prices. The best 100 ears of corn were shown by Edson Bennett, who last year exhibited the best 10 ears of corn, any variety. The best 50 ears of Legal Tender corn were shown by a son of D. B. Nims. In a class of 90 students who took the examination for certificates as corn judges, J. W. Coverdale of Elmwood was first. "The Wallaces' Farmer Cup," for the best corn judging done by club of five, was awarded to the Packwood Corn Club of Packwood.

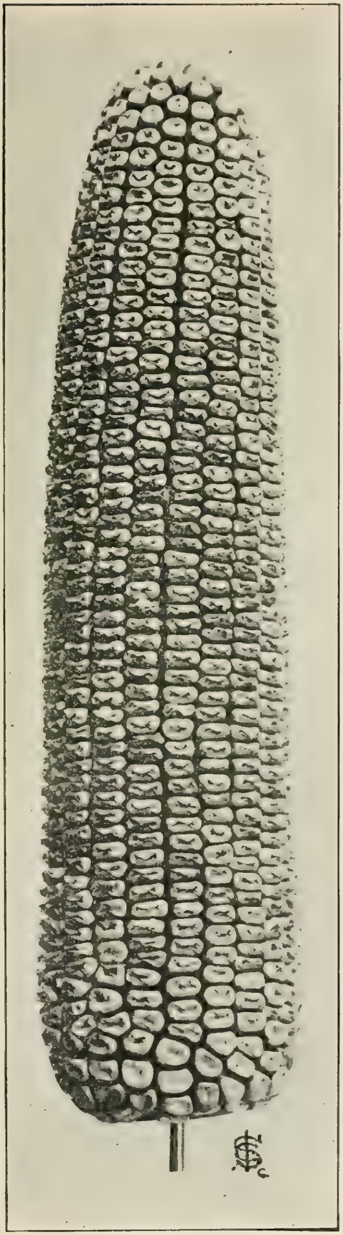
All the short course students assembled in the college chapel to hear such men as Assistant Secretary Willet M. Hays of the United States agricultural department, the noted Angus breeder, O. E. Bradfute, of Cedarville, Ohio; Mrs. Caroline M. Hunt of the University of Michigan, Miss Jessie Field, the energetic and pushing county superintendent of schools of Page county; Editor James Atkinson of the Des Moines Homestead; President Asa Turner of the Iowa Corn Growers' Association; J. C. Simpson of the Iowa State Fair, Dean Waters of Missouri Agricultural College, and Professor C. F. Curtiss talk on subjects in which all had a mutual interest. These talks were full of inspiration and practical experience and the hearing of them is sure to redound to the promotion of the highest ideals of farming and the country home.

At the election of officers John Sundberg of Whiting, Iowa, was made president; J. W. Coverdale, Elmwood, Iowa, vice president; B. W. Crossley, Ames, Iowa, secretary, and Fred McCulloch, Hartwick, Iowa, membership secretary and treasurer.

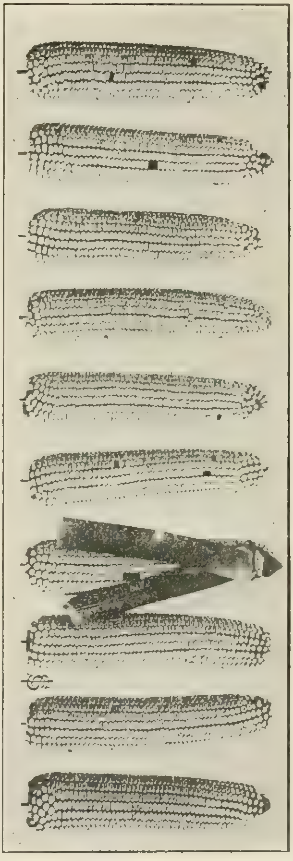
The ticket of vice presidents for the following year are:

District 1. Geo. M. Allee, Newell.
District 2. M. S. Nelson, Goldfield.
District 3. A. E. Quaife, Ionia.
District 4. Paul C. Taff, Panora.
District 5. C. O. Garrett, Mitchellville.
District 6. L. C. Hutcheson, West Branch.
District 7. F. H. Klopping, Neola.
District 8. Fred Wooley, Garden Grove.
District 9. W. A. Hook, Packwood.

Iowa won in the aggregate about $2,000 of the Armour and Rosenbaum scholarships money offered by the 1907 International Live Stock Exposition on its live stock exhibits and team judging work. Dean Curtiss distributed this money to short course students in the form of six Armour and one Rosenbaum scholarships based on their proficiency in judging four classes of corn and eight of stock—two classes each of sheep, swine, cattle and horses and one class each of the following varieties of corn, Reid's Yellow Dent, Leaming Boone County White and Silver Mine. The Armour scholarships, valued at $250 each, were awarded to Walter Cooper, Knierim, age 19; H. B. Cornwell, Ankeny, age 19; Frank Sanders, Hartley, age 19; B. C. Brown, Anamosa, age 17; Harry Steenboch, Perisia, age 20, and Ray Gatewood, Packwood, age 18. The Rosenbaum



Grand champion single ear at the Iowa Corn Growers' Association, exhibited by J. A. Mason, "Reeds Yellow Dent"



Grand champion ten ears exhibited by C. R. Bishop, at the Iowa Corn Growers' Association, Ames, Iowa.

scholarship was awarded to Thomas Burford, Des Moines, age 20. The conditions of the competition for the Armour scholarships were that the young men were to be under 21 years of age and of limited means which would render them incapable of getting through college on their own resources. The contest was limited to students who had not attended an agricultural college course previously. There were no restrictions as to financial standing in connection with the distribution of the Rosenbaum scholarship.

The tribute paid to the work of Dean Charles F. Curtiss and his assistants by the Breeders' Gazette, is worth repeating. "Iowa ideas are growing. Some are fruiting in economic reforms, others in the improvement of farm crops and farm practices. It is fitting that a farm state should be the incubator of helpful ideas for agricultural people. The Iowa Agricultural College at Ames has fairly inoculated the State with the virus which compels farmers to think. to plan, to improve and to help one another."

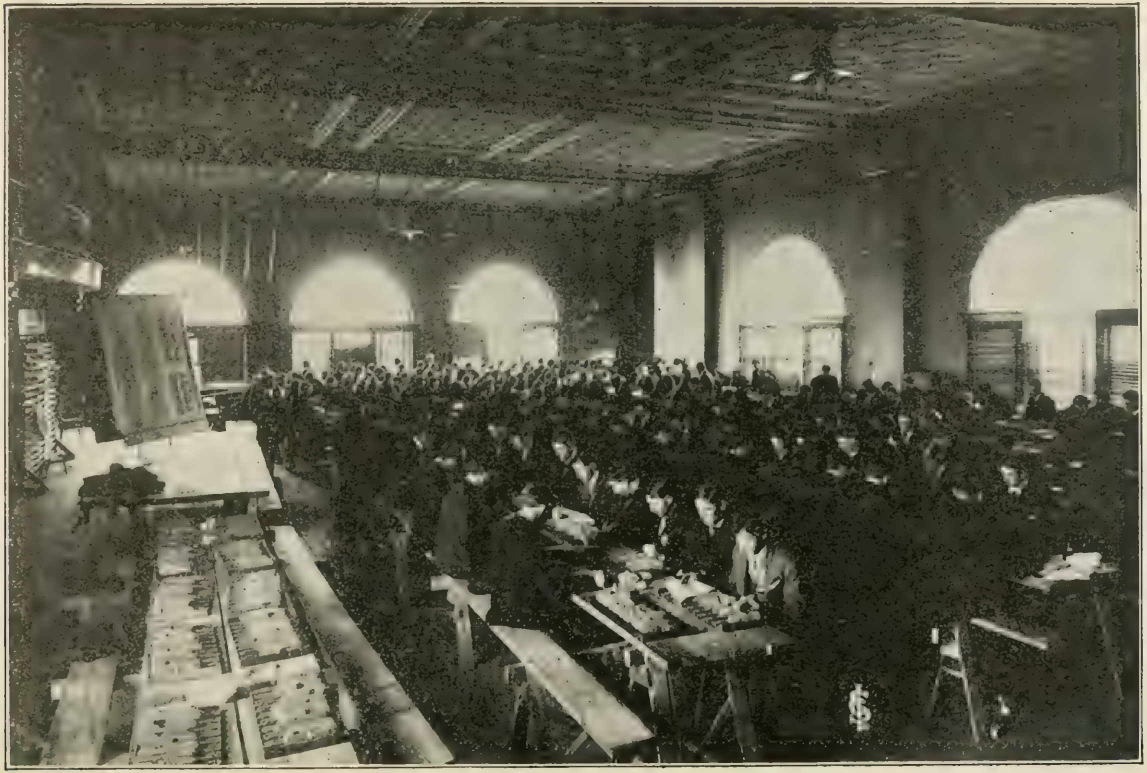
"THE SHORT COURSE AT AMES."

Miss Mabel C. Peters, Sac City, Iowa, before Sac County Farmers' Institute.

I arrived in Ames about dusk and took the electric motor, which rapidly carried me to the college grounds. I was shown to Margaret Hall, where I was to receive room and board while there, which is a very homelike place. The next morning when daylight appeared I was very favorably impressed with the location.

We were told to get goods for a shirt waist before we came to our work at 9 o'clock. The mornings of the first few days were spent in each girl making herself a shirt waist, with Miss Donovan as instructor. The afternoons of those days were spent in the chemical laboratory working out some experiments in chemistry, very much like I had in my chemistry work here in the academy last year, only it had more bearing on foods. Mr. Mitchell was instructor in this work.

On Saturday our work in the cooking department commenced. The mornings were spent in the cooking laboratory throughout the remainder of the short course. At 9 o'clock every morning we assembled in Clio Hall and listened to a half-hour talk from Mrs. Feulhing, which was very instructive. From there we went to the cooking laboratory, which is on the third floor in Margaret Hall. Here there are three kitchens, a dining room and a pantry. Very cheerful, tidily kept rooms. Each kitchen is provided with several tables, in each three or four drawers containing cooking utensils. The short course students were equally divided among these three kitchens, with an instructor presiding over each kitchen. Three or four girls were assigned a place at each table. Each girl had at her place a little gas stove on which to do her cooking and a drawer containing her cooking utensils. As soon as we had taken our places at the table a printed slip was passed to each containing recipes of the cooking for that day. Every one went immediately to work. After the cooking was done the dish washing came, as usual. There was a certain order in which these utensils were to be kept. After these were put



A class in corn judging, at short course, Iowa State College, 1908, Ames.

away you were supposed to sit down until your instructor came and viewed your work. If it was properly done and everything in order you were excused, if not, you were told wherein it failed and expected to put it in order. Dish towels were to be hung up neatly and while at work you must keep your table tidy.

One thing that I very much liked about the work there was the strong emphasis placed upon order, which I consider is one of the first principles of good housekeeping in the true sense of the word.

The first morning was spent in cooking vegetables, the next cereals, the two following days the cooking of meats, next the cooking for the sick and the last day fruits. Here we learned many ways of cooking and serving, some very apetizing and attractive dishes, and obtained some very helpful ideas, some new and some old. I will give a few of them, which might be of benefit to some of you.

Pepper is a superfluous article of diet, there being no nutrition whatever in it. Scientific cooks use less spices. The day is coming when we will have less and less highly spiced foods.

We must eat what we can procure and what satisfies every need of the body. Prepare your foods, not in the easiest way, but the most palatable and nutritious. The basis of palatable foods is sanitary cooking, and the cooking of our foods the proper length of time for each article, and in the proper manner.

They advised cornmeal, oatmeal and vitos as the nutritious breakfast foods. The reason so many people do not like breakfast foods is because they are not thoroughly cooked and not served in an appetizing way. Oatmeal is of very high food value. Mrs. Feuling says: "I have never found a more appetizing, palatable and nutritious dish than the breakfast foods when properly cooked and properly served." Long cooking is very important. They may be served with cream and sugar and an addition of jelly or fruit, if so desired. The uncooked breakfast foods are not of very high food value for the bulk and are high priced and are for lazy people. There is more nurition in yellow cornmeal than in white.

So much lies in the way an egg is cooked in respect to its digestability. They should never be cooked at boiling temperature. Have been tested in test tubes with the strongest of acids and found absolutely indigestible when cooked at the boiling point. This is the way they advise cooking them: Take one pint of boiling water to each egg; take off the stove, then drop in the eggs and let stand ten minutes for a soft, nice, creamy egg, for a firm egg, twenty minutes.

Use forethought about your meals, meats especially, vegetables sometimes, cereals always.

The chief principles in meat cooking lies in what it is to be used for. If for meat sear it over by using boiling water to keep the juices within, and if for soup use cold water. Cook all meats at a temperature above the boiling point and longer than the ordinary recipe. Have your frying pan hot before putting meat into it. Never stick a fork into frying meat, as it permits the juices to escape, but slip the fork under and turn it over.

When planning a meal one should use good taste in the appearance of the table, serving what will give a contrast of colors. As an illustration carrots and potatoes at the same meal make a pretty contrast.

They taught the importance of serving articles that were the most palatable together. They also brought forth the importance of economy in cooking by making over into tasty and palatable dishes what was left. We obtained some very practical and tasty recipes. In this school they are not taught paultry fashion, either in cooking or serving.

One of the greatest treats of the short course was Mrs. Blair from the domestic art department of Minnesota. We all looked forward to her talks from day to day. In her talks she dwelt largely upon home decorations and dress. She says: "The greatest art of housekeeping is simplicity." She advocates having tasty, plain and neat furnishings in the home. In the sitting room restful pictures, and above all things have it comfortable. In the dining room have a few tastily kept plants, convenient kitchen and flowers in the back yard. Will give you the article she gave us on dining room cheer.

"One set of fine, spotless table linen, sprinkled, not too thickly, with pretty glass, china and silver and well lighted with brightness, tempered to the right consistency not to dazzle. To this add a few sunny faces, some good conversation, spiced with gayety. The unpalatable, distasteful portions having been previously eliminated. Then quietly and by degrees add food which has been carefully and daintily prepared and arranged. Over all scatter little flecks of kindness and courtesy till an inward glow is produced and keep at this point from half an hour to an hour or longer."

Taking up the subject of dress, she says: "Do not follow fashions and fads, but wear what is becoming, small figured goods always being in good taste." She does not consider silk in good taste for children. In her talk she referred to people who considered their appearance consisted in the amount of money expended in their dress, making very forcible the fact that it is not so much the expense they put in their apparel as it is in having them tasty, neat and care in putting them on, and that they are neatly attired throughout. They wish the girls in their schools of domestic economy to dress neat and plain.

Another good talk which we had was by Miss Fields, a county superintendent, who stated that it was injurious to the minds of the children to have teachers from the city go into the country to teach the schools; that they were blue, oh, so blue, and lonesome; this was contagious and cultivated discontent among the children. She had had such teachers in her county who had come to her and said they could not do anything with those unruly boys and made a failure and gave it up. She then sent a country girl to take her place, who interested the children by making flower beds, etc., making the grounds attractive, interesting them on agricultural lines, which brought about happiness and contentment. And she heard no more of those unruly boys and it proved a success. She also stated that we often read in the paper that Mr. and Mrs. So-and-So had moved to town so that their children may have better educational advantages. She fully expects to see the day come when you will read in the paper Mr. and Mrs. So-and-So has moved into their beautiful country home so that their children may have better educational advantages. She says that she believes it more since she has been to the short course at Ames and sees what kind of farmers Iowa has and what influence they can have at the capitol down here at Des Moines. She stated that her sympathies and feelings were with the country.

They have a very pleasant campus at Ames and Margaret Hall makes a very pleasant home for the young ladies and the Y. M. C. A. building for the young men. They also have social events in connection with the work there. Mrs. A. B. Storms very kindly entertained the girls of the short course one evening at her home, which we greatly appreciated.

Among the many courses offered at this school is a four years' course in domestic science.

If one is choosing a college course I consider this course at Ames a very much more practical course for the average young lady than many of the courses. I fully believe that one of the highest callings for a young lady is to be a good housekeeper, which, I judge from their talk, many of the teachers there are.

I consider this year's method of their short course an improvement on former years, as heretofore they had demonstration work done by the teachers, while this year each student did actual laboratory work. They expect next year to give a second year's work on the short course, which is another improvement.

There were between 40 and 50 young ladies taking the short course this year and next year I hope to see twice that number, as I consider it very beneficial and I believe the day is coming when there is going to be more attention given to this subject.

WHO SHOULD BUY IMPROVED BREEDING STOCK?

Wallaces' Farmer.

It is not every farmer who should attend public sales to buy breeding stock. The scrub farmer, the farmer who has made no better than the ordinary provision for the pasturing, feeding, and sheltering of stock, has no business to buy improved stock. The scrub is a hardy fellow, can stand almost anything, is satisfied with little, and is worth little. Hence the proper kind of stock for the scrub farmer is scrub stock.

The scrub farmer who is accustomed to raising scrub stock is a direct menace to the breeding interests, and it is unfortunate for any breeder of improved stock to sell them to the man who cannot give them improved care. For this improvement has been made by better feeding and better housing as well as by careful observance of the laws of heredity or breeding. If they are taken out of this better environment they will naturally degenerate into scrubs, and worse than scrubs; for they do not have the vitality of the scrub and hence succumb the more quickly to the hard, scrub conditions.

The man who undertakes to invest in improved cattle before he has improved pastures and sufficient buildings makes a mistake which he will sooner or later find to be very costly. Farmers who have improved pastures very often make an almost equally costly mistake in the line of shelter. They have paid big money for improved stock, have pasture and feed enough; but, like the pious old lady who filled her pastor's cup up with molasses on the theory that nothing was too good for the preacher, they have built costly buildings without providing for ventilation and sunlight, which are quite as essential to improved stock as improved feed. Improved stock requires good buildings, but housing which does not supply ventilation and sunlight is not good housing, and will sooner or later bring trouble to the man who undertakes to work a miracle by growing improved stock under these conditions.

The reason why farmers have graded up their hogs until in the corn belt they are almost all practically pure bred is because it has been comparatively easy to provide the proper feed and proper housing as well as to buy improved sires.

Who, then, should buy improved stock? Every man who has improved his pastures and provided proper housing? It is not every man who should buy improved stock for the purpose of establishing a breeding herd, especially in cattle or horses. He should confine his purchases at first to the sire and note the results. If he has provided the proper environment, he will be astonished at the results of the first cross. He will find this first cross capable of very great but not nearly the proportionate improvement. After he has graded up it will be time for him to buy a few pure bred females and lay the foundation of a pure bred herd.

The breeding interests have suffered great loss in past years by the purchase of pure bred females by farmers who have not yet learned the art of growing high grade stock. These females have degenerated by adapting themselves to the poor environment, and this man, who might possibly have become the continued patron of larger and better breeders, becomes disgusted with the pure bred business and concludes that the grade is the best after all; and so it is for him, but not necessarily for the man who has advanced far enough to furnish pure bred conditions.

In buying pure bred cattle at the various sales the farmer should use wise discrimination. He should not for a moment allow himself to be infected with the color craze or any other fad. What he is after is quality, which does not lie in the color of the hair, though it should be of the color recognized in the breed. Neither should he allow himself to be infected with the fad of paying big prices for any particular fancy breeding that may happen to be the rage. He should by all means buy cattle of sound pedigree.

Farmers should use wise discrimination in selecting the type of cattle for which their farms are fitted. A great many of our readers are more or less engaged in dairying. In buying Short-horns they should pay especial attention to the milking qualities of the dams and grandams of the sire. It is not easy to get this information except so far as the type of the animal reveals it, which it does not always do with certainty. There is no danger in buying Short-horns of getting sires from cows that give too much milk; the more the better. Neither is there any danger in buying Herefords or any other breed of getting them from cows that are too heavy milkers; the more the better. Breeders of the distinctly beef breeds recognize this by their use of nurse cows, "wet nurses," to push forward their show stock to the greatest possible extent. Where the farmer is buying with the intention of letting the calves run with the cows, this is not a matter of so great importance; but even here, unless he is on the range, there is no danger of getting a cow that gives too much milk.

Who, then, should buy improved live stock for breeding? Every man who is fit to handle them wisely. The breeding interests are not benefited but injured by the purchase of improved cattle by men who are not themselves improved up to the point where they can take care of them. No man, however, who has good grass such as can be grown on land worth from fifty to one hundred dollars an acre should for a single moment be satisfied with scrub or low grade cattle. To be satisfied with this means impoverishment sooner or later.

No man should be satisfied to buy a poor individual, no matter what its pedigree may be. The condition of the animal is a better testimony to the pedigree than the paper on which it is written. If it has the right breeding and the right care it will be a good individual. If it has the right breeding and not the right care it will not. No matter how good the individual and the care, or how perfect the environment, the animal will not be what it should be unless it has been born right and is descended from good parentage on both sides.

The high price of land in the corn belt is a most potent and weighty reason for buying the best kind of live stock now offered at public sale. Neither the scrpb nor the low grade sire nor the poorly fed individual, no matter how good its pedigree, will pay interest on these high priced lands. Every animal fit to eat the grass or grains that grow on these high priced lands must be well bred, at least on one side, and then it must have that human environment that will supplement the natural and artificial environment, and thus bring out the latent capacities to their utmost extent.

Our hogs are pretty well bred up. The same may be said of our sheep. Now may there be "a long pull and a strong pull and a pull all together," to grade up the cattle on these western prairies and thus get full value out of the grains and grasses which we are growing at such a large expenditure for high priced machinery and labor.

IMPROVED STOCK ON $100 LAND.

Wallaces' Farmer.

As land advances in price the kind of live stock that can be kept at a profit becomes a matter for very careful study. When land was worth fifteen to twenty dollars, or when there was free range, it was quite possible to make good money by keeping a cow for the chance of a calf. The man who kept a scrub bull might then be regarded as unwise, but not altogether foolish.

As land advances in price, even though there should be a corresponding advance in the price of beef, it becomes important to use only the machine for converting the grains and grasses into beef that will do it to the best advantage. The high grade animal or the pure bred may not make any more pounds of beef per ton of corn or hay; for the making of the pounds depends not upon breeding, but upon the capacity of digestion and assimilation, which may be quite as high in the scrub as in the pure bred. The unfortunate thing, however, is that these pounds will not sell, and when scrub beef will sell at three to four cents well bred beef, properly fed, may sell at from six to seven cents. Therefore, the one may be grown at a loss and the other at a very considerable profit.

For a long time agricultural papers have been preaching the gospel that the scrub will have to go; but their gospel, if heard, has not always been practiced. Fortunately, the forces of nature help the advocates of any good cause, whether it be reform in agriculture or in politics or in the lives of men. These high prices of land are compelling farmers to think more carefully than they ever did before of the advantages of well bred stock of whatever kind.

Farming has become more diversified than it has ever been before. We are discovering that the farm, with its environment and its improvements, especially the man who manages it, may be adapted to feeding beef cattle, or growing hogs, or feeding sheep, or to dairying; and it is wisdom to select the kind of stock to which the farm is best adapted, but particularly to which the farmer is adapted. It is very much easier to change fields and modify the buildings to accommodate the man who runs the farm, whether owner or renter, than it is to make a man over. This, however, is not enough.

When any kind of live stock is selected, for instance cattle, as the main product of the farm, then it becomes necessary to decide whether they shall be grown and fed, or purchased and fed for beef production; or if they are to be used exclusively for milk production; or if they are to be used for combined beef and milk production. This having been decided, the question of the kind of stock they should use, especially the kind they should grow, and consequently the kind of sires they should purchase, will determine itself.

As farms advance in value and in price, an increasing number of them must be used for both milk and beef production and fewer of them for the exclusive growing and feeding of beef cattle. This will not prevent an incrase in the number of farms devoted to special purpose dairying. These two increases will go side by side, together with feeding operations, while the growing of calves exclusively for beef must in the very nature of things be confined to lower priced lands.

This inevitable drift of things, the result of the advancing price of land, should lead breeders to modify where necessary their methods of breeding, and particularly so in the case of cattle that are used both for dairying and for beef production. The growers of exclusively beef cattle will not need to make any changes, nor will the growers of special purpose dairy cows; but the growers of improved cattle that are capable of being used profitably for this double purpose will need to make some changes which we have been suggesting to them for a number of years.

It is very important that breeders of this class pay special attention to the development of the milking qualities in such breeds as the Short-horn, Red Poll, Polled Durham and Brown Swiss; nor would any harm come to the breeders of Herefords, Aberdeen Angus, and beef Short-horns through increasing the milking qualities of these breeds. It is a noticeable thing that in many cases the steers that have won prizes at the great shows of the past have had for dams phenomenal milkers, so that it was not necessary to furnish a nurse cow to help out the dam. We have always regretted that some of the breeders of Red Polls and Polled Durhams have endeavored to make special purpose beef cattle out of these breeds. In doing so they bring themselves into sharp competition with the special beef breeds; and to do this effectively they purchase sires of pronounced beef qualities, and thus get away from what is really the special purpose in the development of these breeds.

The development of the habit of milking is quite as important as the inheritance of milking qualities; and to this end the cows intended for the production of bulls to head these dual purpose herds should be milked and thus form the habit. The fact is that it is milking that develops milk cows, just as it is the practicing of the teachings of the Master that develops followers of the Nazerene. No matter what milking qualities may be transmitted, no matter how great the potency is in this line, unless the habit is formed the potency will not be transmitted very effectively.

This will require a change in the methods of the breeders of these breeds that are valuable for what is known as the dual purpose, and which we prefer to describe as the special purpose cow for the quarter of half section farm, where it is necessary not merely to obtain the quantity and quality of milk, but to provide packages in which the roughage of the farm can be profitably transported to market; in other words, to condense freights.

They must henceforth be able to state not merely that a cow is a good milker, but how good a milker she is. We confess we are rather tired of hearing at breeders' meetings the praise of the dual purpose cow sung without any proof of it. It is not enough to be able to say: "The dam of this bull is a splendid milker," or "Why, it is hard to keep her udder from spoiling." or "She gives enough milk for two calves," or, "She milks up to the time of calving." If this is true, then it is possible to furnish the proof. There are so many men that like to blow their own horns that buyers may well be excused from believing unless the seller has the actual proof of it, as demonstrated by the weighing and testing of the milk.

Changes in our agricultural and animal industry are not introduced by the blast of the trumpet. They come gradually, as the changes in the seasons come; but the man who will study the development of agriculture can scarcely fail to see that this change is coming, and that breeders of breeds of cattle that are capable of being used for dual purpose must aim to meet that double purpose, and to meet it in an intelligent way, and in a way that will be convincing to the customer.

This change has been coming for some time. It will come more rapidly in the two or three years to come than it did in the past; for experience is furnishing accumulated evidence every year that farms now given over to exclusive corn growing, especially the best corn lands in Illinois and Iowa, must hereafter be devoted to growing stock—horses, hogs, sheep, or cattle.

Inasmuch as it does not pay to keep a brood mare for the chance of a colt, the profitable growing of horses is limited to the number of brood mares that can be worked on the farm, and hence they cannot make much headway in getting rid of the grasses that must be grown in the rotation on the quarter section farm. Hogs will of course be grown in increasing numbers, but the hog is not primarily a grass-eating animal, and hence he cannot get away with the pastures that the rotation absolutely requires. Sheep will do better; but the parasitic enemies of sheep will prevent their being grown in sufficient numbers on a grass farm in the humid states to meet the requirements of the needed rotation. Hence the only thing left is cattle, either to be grown for the chance of a calf, or to be purchased elsewhere and fed out, or to be kept for both milk and beef production. Breeders should therefore listen to the voice of the corn root louse, the corn root worm, the corn root borer, and the mold that is affecting the corn fields in so many sections this year, pleading with farmers to adopt systems of rotation, and then supply these farms with live stock adapted to that purpose.

THE OVERHEATED HORSE.

By A. S. Alexander, Breeders' Gazette.

It puzzles many a farmer to explain why some horses seem especially prone to heat exhaustion or sunstroke and they are also at a loss to know how to ward off the attack or to treat it intelligently when first observed. It may therefore be of interest to explain that apparently every horse attacked with sunstroke is ailing the day of attack and otherwise would not be affected. If this be not so it certainly is difficult to explain just why one horse suffers out of a number kept in the same stable and fed and managed alike; but if we keep a careful watch over the horses in our care it becomes possible in many instances to detect slight departures from normal conditions which may be taken as premonitory of serious trouble if not checked in time. Inability to stand work in hot weather, when not due to a previous attack of heat exhaustion, seems dependent upon disturbance of the digestive organs. Indigestion, in short, usually is present when a horse suddenly shows the symptoms of distress which are characteristic of heat exhaustion and which precede sunstroke or "heat apoplexy" as it might better be termed. This indigestion does not always appear immediately before or just at the time of the attack; it may come on gradually, or has been chronic in the subject attacked and quiet unfits him for hard work in the field during the heated term, did the owner but recognize the trouble and appreciate the danger it entails.

The horse affected with indigestion of chronic form sheds late or tardily, has a tightness of skin indicating emaciation or lack of perfect health and often the hair remains long and course and tends to stand on end while the ribs are too apparent and the horse lacks spirit, vigor, appetite and staying qualities. Such symptoms, however, may be indicative of several different ailments, or indeed of almost any depleting sickness the nature of which is not patent to the eye of the attendant. Any one of these weakening maladies renders a horse peculiarly subject to sunstroke so that its known presence should make the owner or attendant especially careful of his charge during any prolonged spell of extremely hot, muggy, fatiguing weather. But most often indigestion is the trouble leading up to heat exhaustion and its presence is proved if the horse shows in addition to general signs of ill health, or apart from the chronic symptoms, a sudden or continued lack of normal consistency, color, and odor in the manure he passes. Instead of the feces coming away in balls of golden yellow color and devoid of other than the comparatively slight and not offensive odor, it is voided in slushy masses of abnormally pale color and highly offensive smell; or it may come away in slime-covered, clay-colored or almost white balls, or in the liquid state characteristic of diarrhoea. Whether these signs of derangement of the digestive organs are seen for some time or suddenly they make it certain that the affected animal is unfit for work in the fields if the weather is extraordinarily hot or if he is put to work at such times it will be at the risk of an attack of heat exhaustion, if indeed, a preliminary attack has not caused the derangement in cases where nothing was apparently wrong when the horse started the day's work.

Indigestion, such as we have outlined, is induced by keeping work horses in badly ventilated, dirty stables; paying no attention to grooming; overworking the horses in times of stress; allowing too little time for the proper mastication of food at the noon hour; giving cool water too seldom and then in too large quantities, or too soon after a meal; feeding corn during hot weather or giving bran mashes to horses not accustomed to such food or allowing them to eat cut grass that has heated, or feeding new oats or new hay before they have become fit by aging or in too large quantities without accustoming the horse to the change. In other words, almost anything that disturbs the general health of the horse will affect his digestive organs in hot weather and such disturbance, therefore, makes him subject to heat exhaustion. This being the case the greatest possible attention should be paid by every farmer and horseman to the general health of his horses during the heated term of the summer, and especially if much hard work has to be done in the fields.

Thorough grooming at least once a day by keeping the pores of the skin unclogged and giving the sweat glands a proper chance to work perfectly; allowing the horse sufficient time to chew his food well and therefore prepare it for perfect digestion; giving him cool, pure water often, but not immediately after feeding, to provide for the extra demands made upon the liquids of the body during hot weather; surrounding him with all possible comforts in his stable, such as fresh air, freedom from irritating gases and flies, providing clean and sufficient bedding, shading the windows to prevent direct sunlight from injuring the eyes, keeping the feed boxes and mangers clean and sweet and removing all food that is not eaten up clean at each meal—all of these things help to keep a horse healthy and prevent trouble in hot weather and who can deny that they are the richly deserved right of every hard worked horse?

At the first sign of derangement of the digestive organs cut down the grain ration and see that all food used is sound and free from mould or other taint. Allow free access to rock salt and mix powdered wood charcoal, or a mixture of that and bicarbonate of soda, freely in the food twice daily. If the manure is pale in color and offensive in odor give half an ounce of hyposulphite of soda twice daily in the food or dissolved in the drinking water, if the horse will take it that way. If the dung comes in balls but clay-colored and slimy give an ounce of glauber salts twice daily in the food or drinking water until improvement is seen; then once daily until conditions are normal. If much gas is passed with the feces, or at any time during the day, give charcoal freely and add hyposulphite of soda. If the horse pants at work and has dry, hot skin and is easily exhausted, so that the owner concludes that sometime or other he has been "overhet," work him early in the morning and late in the afternoon or evening, but not in the middle hours of the day; keep his head shaded, but do not burden it with a big soggy, heavy, dirty sponge which is not protective but adds much to the misery of the horse. Air should pass freely under anything used to protect the poll of the horse's head while at work in the field. Then too, if the easily tired horse has a thick, coarse coat of hair clip it off at once as this will tend to prevent exhaustion and at the same time prevent "summer itch."

Despite all that can be done to prevent, a horse will now and then succumb to the heat and the attack is ushered in by sudden stopping of the sweat, lagging, panting, distension of the nostrils, redness of the lining membranes of the eyelids and nostrils, passing of gas or thin feces, bloating, staggering, stumbling, weakness, and finally falling and unconsciousness.

At the first sign of any one of these symptoms or the combination unhitch the horse, remove his harness, get him into a shady place, under a dense tree where there is a draft of air by preference, and as soon as possible sprinkle him from head to foot with cold water from a sprinkling can, keep cold wet swabs to the poll of his head and give him large, frequent doses of any stimulant that can be had, but do not bleed him or administer dangerous drugs like tincture of aconite, acetanilid, or strychnia. In severe cases the veterinarian should be called as soon as the horse has been treated as we have suggested and we feel sure that by following the advice given as to the prevention and giving first aid intelligently and promptly when needed losses from sunstroke will be materially lessened in our farming districts.

THE DRAFT HORSE.

Chas. E. Baldwin, Spencer, Iowa, before Clay County Farmers' Institute.

It seems to me that we farmers have a just claim on this one class of horses. He is the product of the farm and the best friend we have on the farm. He plows our land, plants and sows our seed, tills our soil, keeps down the weeds and corrupt vegetation, harvests and hauls our grain to market. All these things he does and many more. What is more wonderful, there is never any complaint on his part. The draft horse is truly our "Beast of Burden."

What is understood by the draft horse? Does it mean the 2,000 pound horse? Does it mean the Percheron, Shire, Clyde, Belgian or any particular breed of heavy horses? No, it doesn't mean any one breed but *all* of them. When we say draft horse we do not refer to trotting horse, runner, or bucking broncho. We mean the horse that every honest farmer loves best. The draft horse that we, as farmers, think so much of, need not necessarily be a pure-bred horse, but he ought to be a well fed horse. Well fed and not pure-bred is far better than pure-bred and not well fed.

As to the best weight for a draft farm horse, there is a wide difference of opinion. Some men prefer the heaviest horse they can raise, from 1,700 to 1,800 pounds in weight. Others prefer those ranging from 1,400 pounds to 1,600 pounds; and still others cling to the 1,200 to 1,400 pound horse. In my opinion the last class when regarded as an all around general farm horse has far more admirers than the heavier types.

There is very little if any work for horses on the farm that can not be done by a good 1,200 pound horse and as a general rule when it comes to making needed trips of a farmer to town or elsewhere on the road the lighter draft horse has the advantage. But there is another side to the question, viz., the selling value. Other points being equal, the man with the heavier type of draft horse is hunted by the horsebuyer while the man with the smaller type is hunting a buyer, and it is needless to say that when a dealer finds a good heavy draft horse he will leave a nice little sum of money. If a farmer has a surplus of good heavy draft horses he need not be burdened by their presence as he can always sell them to good advantage. This is not always true of the smaller draft horse.

There is another argument in favor of the smaller type. It requires less feed to grow and keep a smaller horse. As a rule horses require feed in proportion to their size and in feeding five or six horses for a year with grain at present prices, a difference of a few ears of corn to each horse every feed is no small item, although a farmer ordinarily would not stop to consider these facts. All things considered I think it is best to raise as heavy a draft horse as you can.

As to the best breed of draft horses to raise, there is another wide difference of opinion among farmers. Each and every breed has its admirers and good qualities.

Personally I think that ordinary mares should be bred to a stallion that will give the colt good heavy bone and limbs. I do not like to see heavy horses with small bones in their limbs. They can not endure with the heavy boned horse. I have seen some very good results from crossing ordinary draft mares with pure-bred Shire stallions, also from the same class of mares to the pure-bred Belgian stallion and in fact the same can be said in reference to the other pure-bred draft stallions.

I do not wish to be understood as saying that when you have made a certain cross with a pure-bred stallion you have made the horse. The colt must be grown. We should begin to grow the colt before he sees the light of day. The way to begin is to take good care of the mare and give her plenty of the proper kind of feed. For the farmer who does not buy feed but depends upon what he raises on his farm. I think oats are about the best feed for the brood mare. Always be kind and gentle to the brood mare. If you are otherwise she may become very nervous.

When the colt is old enough and will eat oats, do not be stingy with them. Ten dollars' worth of oats at the present prices will go a long way toward giving him all the oats he will eat during the first winter, and the first winter with a colt comes very near determining his fate. If he is half starved, gets lousy, etc., it is next to impossible for him to ever make the horse he would make with extra care during his first year. Of course you can not do it all during the first year, you should be just as particular with him each year until maturity.

The draft colt as a rule is easily broken but should become accustomed to being handled from the very start. Halter them when only a few days old and keep them familiar with the halter and you will avoid a great deal of trouble that you otherwise would experience if he is left until he is two or three years of age. Train your draft horses before they are matured.

Will it pay the average farmer to keep pure-bred draft mares?

How is this question to be answered? Can you, farmer friends, answer it? No, *we* can not. We can not because the average farmer is not keeping pure-bred mares, consequently our answer would be only guess work. We can only give our opinions and that is what I shall endeavor to do.

The average farmer! Who is the average farmer? He is the farmer. generally who does not have eight hundred, ten hundred or twelve hundred dollars to invest in two or three pure-bred draft mares and wait from three to five years for any returns on the investment.

There are several reasons why the average farmer does not invest in pure-bred draft mares. In the first place if he has a few hundred dollars lying idle he can invest where he can get quicker returns. Secondly, there are great risks to run. Your mares are liable to get in a barbed wire fence and lose their lives. There is great danger of loss at foaling time. You may lose the mare, or you may lose her foal, or you may lose them both. It may seem strange to some people that the average farmer is not keeping pure-bred draft mares just the same as he is keeping pure-bred cattle and pure-bred hogs. But it is not so strange when one stops to consider the question. While it requires less capital to engage in raisng pure bred cattle and still less to raise pure-bred hogs, it is a safer proposition and the returns come sooner.

The price of horses fluctuates more than on other stock, but when a farmer once enters into the business of raising pure-bred draft horses he should make up his mind to stay right by it.

When we consider that $1,000 put into a couple of pure-bred draft mares, some extra money in the proper kind of fences, etc., and wait four or five years for any returns, knowing as we do, that the same money invested in cattle, sheep, hogs or poultry will give quick and certain profits, is it any wonder that there are so few average farmers branching out into this kind of business.

I think the very best way for the average farmer to keep pure-bred draft mares is to begin with one mare and build up from this. It would seem slow at first, but after a few years he would be greatly surprised at his success. Commence with an extra good mare right on the start and when she is found to produce extra good colts, then never part with her at any price unless you know where you can replace her with a better one.

To be sure the first cost will be greater than it would be for a grade draft mare that would be practically as good an individual but when the first cost is met there will be no more expense than there would be in raising colts from a grade draft mare.

Coming back to the question again "Will it pay the average farmer to keep pure-bred draft mare," my opinion is that it would not pay every farmer to keep them as they are not all adapted for raising pure-bred horses. But I do think that it would pay a few average farmers in every community, who are good horsemen, to keep pure-bred draft mares and raise pure-bred draft horses.

SENSE WANTED IN BUYING SHORT-HORNS.

Breeders' Gazette.

We referred recently to a mistake often made by those who are seeking the popular Scotch blood in connection with Short-horn breeding. That this blood should be in such demand is no mystery. It was resorted to a quarter of a century ago as the only available means of checking the apparently irresistable onslaught of the Herefords and Black Polls throughout the cornbelt and on the range. The tenant farmers of Aberdeenshire, who had for so many years been pursuing the even tenor of their way unmindful of the fads and fashions followed by their fellow breeders in England and the States, succeeded in evolving a well established type of Short-horns distinguished as a rule for early maturity, quick feeding quality, depth of flesh, and, strange to say, in many cases retaining one of the original excellencies of the breed, the milking habit.

Since the early 80's these north country Short-horns have been carrying practically all before them at the great American breeding shows. Moreover, they have practically revolutionized the type of Short-horn steers coming to market; the big, upstanding 2,000-pounders of the old day have given place, largely through the use of this same Scotch blood, to a type of animals approximating the best "baby beef" standards now demanded by feeders and butchers alike. One need in fact but turn to the record of the last International exposition to find ample justification for the high regard in which this Scotch blood is still held; but too much popularity often carries with itself the germs of its own downfall. When any strain of blood becomes in such general demand that every animal produced by it, good, bad or indifferent, is retained religiously for reproductive purposes, trouble is surely brewing for somebody. The Scotch Short-horns are being subjected to this ordeal at the present time.

As has often been said, the weeds produced by any crop should be freely discarded. The trouble in this case arises from the fact that the best specimens of Scotch breeding are quickly picked up by the more prominent breeders and exhibitors, who have ample funds to enable them to skim the cream, leaving thin milk for those who do not feel able to invest so much in the richer product. In other words, there are not enough good Short-horns of the so-called "pure" or "straight" Scotch breeding to go half way around. As a matter of fact the bulls of this blood have now been used in America so long that it is not difficult to find cattle that have been so strongly topped out with Aberdeenshire bulls that the progeny is, for all practical purposes, just as useful as animals tracing in all directions to the original Scottish stock. It is most lamentable that better judgment is not used in this matter. It is obviously good sense for a buyer of limited means to purchase one of the so-called Scotch-topped American-bred animals if he be a good individual and carries upward of 85 per cent of the desired blood, in preference to picking up one that can be rated as "pure" Scotch but which at the same time may be wanting in the first essentials of a good Short-horn. The more frequent use of the tabulated pedigree will tend to a more rational balancing of values in these cases and we commend it to all who are starting out to buy a bull.

If any proof is needed to show that Scotch cattle carrying so-called "outcrosses" should not be turned down simply on that account, it is afforded in abundance by reference to the breeding of the champion animals in the Short-horn class at the late International exposition. The great senior champion bull Whitehall Marshall 209776, bred by Mr. Kelly and shown by Mr. Harding, is out of a so-called straight Scotch cow, imp. Missie 167th, bred by the late Mr. Marr. His sire, Whitehall Sultan, famous throughout all America not only as a show bull but as one of the most extraordinary stock-getters of the present day, while bred by Mr. Dean Willis, the great manipulator of the Cruickshank blood in the south of England, receives through his sire, Bapton Sultan 163570, several infusions of the blood of English cattle that never saw Aberdeenshire. As a matter of fact Mr. Willis—who as a constructive breeder of Short-horns probably has no peer on either side of the water at the present time—has had marked success in outcrossing the Scotch cattle that form the foundation of his great herd.

Now nobody in America will regard these infusions of English Short-horn blood as detracting five cents' worth from the admitted value of Mr. Harding's splendid bull; that is to say, if an outcross is put in by a man residing anywhere in Great Britain, Ireland or any other country across the sea, "it goes" without any question from anybody on this side of the water; but if any American breeder, no matter how intelligent or experienced, has the courage to pursue a similar course and secures like results, his work is criticised, his animals are sacrificed when they come into the sale ring and he is either driven back into the "straight" and narrow path marked out for him by our "purists," or he quits the business in disgust. In other words we allow old country breeders greater liberties than we permit ourselves to indulge in. The English or Scotch breeders can pick their bulls anywhere in the Kingdom, without regard to their breeding, and we on this side accept the cross, whatever it may be, without a murmer, even though it may have been put on by the most insignificant tenant farmer to be found in any out-of-the-way corner of His Majesty's dominions. The most inexperienced breeder in Great Britain is allowed to do that which the oldest and most eminent men in the profession in America are apparently not permitted to do.

This is of course putting a premium on British enterprise and feedom and placing these same essential qualities among our own people under a heavy discount. What must be the inevitable result of this policy? It comes simply to this: that so long as we discriminate thus unfairly against ourselves we shall have to continue indefinitely to go abroad after cattle where the conditions are such that they can be bred man-fashion. Our own policy would be well suited to a class of small boys. In other words it is childish, and we will never have any great original constructive work in our own country until we learn to recognize good results however obtained.

Another striking illustration of the fact that there is good blood other than the Scotch in the herd book that should be recognized and not ignored is seen in the case of the champion cow of the International, Mr. Clark's great Welcome of Meadow Lawn 9th. Anyone who will take the trouble to tabulate her pedigree will find about as good a mixture as can be made. Scotch bulls predominate, but you will also run quickly into Bates-Duchess blood. The case of Mr. Renick's junior champion bull Signet, blending the Marr and Duthie blood with that of "Uncle Abe's" fine old Bates crossed American stock, affords further striking demonstration of the truth of our contention. Many of the other winners were of course squarely within Scotch lines in all directions, but the fact that they were all outclassed in the opinion of the judges by the three outcrossed animals just mentioned should give some pause to those who are disposed to be hypercritical on this subject of the blood of thousands of good Short-horns that have been produced in England or the United States.

AS TO BREEDING SHORT-HORNS.

John Dryden, Whitby Co., Ont. in Breeders' Gazette.

I read with much satisfaction the article entitled "Sense Wanted in Buying Short-horns." It touches a most important question concerning which all has not yet been told. I dare not consent to the declaration that every outcross mingled with the standard blood of the herd will be successful. That depends on so many things, all different in each herd, that he who can wisely weigh the constituent parts and with an unerring intuition come to the right conclusion as shown by results deserves the highest praise.

Where the breeders in America have erred according to my judgement is in the use of the term "pure Scotch." Nothing could be more misleading. It means that all Short-horns bred and reared in Scotland are of equal value. The managing editor of the Gazette knows, for he has stated it in his interesting history of the breed, that all Short-horns in Scotland are not equal in prepotent value; that large numbers ought to be labeled Scotch weeds instead of pure Scotch. It is obvious that no breeder is or can be benefited by transporting them across the sea. The editor knows also, and I know from personal visits, that the Scotch blood which has since been utilized to change the type from a slow-maturing tallow-bearing carcass to one more fleshy and ready for the block, at a much less age emanated from one single herd. Moreover, the cattle most in demand by many of the best breeders in that country now carry the most of that blood. But there are to be found hosts of Short-horns in that country with scarcely a trace of it. Now to label all promiscuously pure Scotch and thus leave the impression that it is equally prepotent is entirely misleading.

You are quite right when you say that many of these so-called "pure Scotch" are neither in quality nor probable prepotency equal to many of the bulls seemingly neglected because of so-called outcrosses. The whole thing is based on mere names which when analyzed have in them neither "rhyme nor reason" nor meaning, and I do not wonder that you plead: "Let us have more sense in buying Short-horns."

It is well known that the late Mr. Cruickshank, long before he parted with his Short-horns, felt that the time had arrived when some outside blood of a similar character should be judiciously intermingled with the Sittyton strains, but the American cry for "pure Cruickshank" at that time forbade him doing it. If he felt it necessary then, how much more is it years after his retirement as a breeder? But who dares to do it now? Most breeders fear the force of public opinion. There is great need of boldness, even though you may know that you are right. We seem to be ever and anon going back to the theory which ruined the Bates Short-horns; to study out only the breeding as represented in the pedigree and if it read right no need to study the individual animals.

To put it a little plainer: It was an effort to make pedigrees instead of producing superior cattle. At that time the cry was "pure Bates." It failed utterly and the whole structure fell with a crash probably never to rise again. But they were not all bad cattle and I agree that mingled with the best of the Scotch blood before applying the cross you are liable to improve rather than injure the cattle of the present day. Who ought to start public opinion in the right direction? I answer, a journal like The Gazette. Because I believe you are right I am willing to stand behind you. Nay, more than that, I have not hesitated to put it into practice even years ago. At that time Cruickshank-bred cattle were, as I believed, becoming too small and too weak in reproducing powers. Too many were non-breeders and others irregular breeders. We could not then import on account of foot and mouth diseases, so I selected a Canadian bull of similar characteristics whose dam and sire were both by Cruickshank bulls, but in their foundation of different blood. Would this mix satisfactorily? It certainly did. This bull gave me size, vigor of constitution, regular breeders and good milkers. But this bull had one weakness; his head was not ideal and his horns were too strong and not well placed. These are minor points which we have now overcome. What I want to say is that many point to this bull in the pedigree expressing great regret that it does not read "straight Cruickshank."

My answer is that I have better and more useful cattle and I know I am right. I have used "more sense" and therefore I rejoice that The Gazette has come to my help in forming public opinion which will enable us all to stand for better cattle, which must mean in reality "better pedigrees."

May I offer another suggestion? It is that we should have annually more history of leading Short-horns. Let it take the form of a book of actual photographs, accompanied by the pedigree, also prizes won, if any, and a fair and full description. Such a book would be valuable for reference in after years and greatly help the breeder of the future in studying the proper mixture of blood to attain his ideal. To be certain of improvement it must be clear, not merely that the blood runs steadily along one line, thus making it prepotent, but that the individual animals were each superior. Otherwise you will find no prepotent strength or excellence, but in its place weakness and inferiority. At that stage the end of your "pure" this or that, be it Bates, Booth, Scotch or Cruickshank, is very near.

PREPARATION OF CATTLE FOR SHOWS.

Breeders' Gazette.

Among the most famous and most successful of the world's cattle feeders Wm. Watson stands in a conspicuous position. He was born in May, 1827, and was the eldest son of Hugh Watson of Keillor, Scotland, whose fame as the eldest great improver of the Angus cattle is world wide in its extent.

Mr. Watson claimed to have been raised up on the milk of the historical Aberdeen-Angus "Prima" cow, "Old Grannie." He received the full benefit of a liberal education at the leading seminaries in England and Scotland; but when seventeen years of age and after a two years' study in Edinburg university, he bade a farewell to classics. Born a stockman, his indulgent father gave him ample scope for his talents and handed him over for several years to the tuition of such eminent breeders as Bates, John and Robert Booth, Maynard, Torr, William Wetherell and Earl Spencer, under whose training he soon became deeply versed in Short-horn lore and general cattle management. To his father and Jonas Webb he practically owed his knowledge of sheep and he stoutly maintained that they understood the management and handling of the flock better than any other breeder he had ever met.

For eighteen years Mr. Watson was the manager of his father's herd of Keillor "doddies," renting also a farm on his own account where he bred Angus cattle, sheep and horses. He was widely sought after in all the three kingdoms. In 1865 he left his native heath for the colonies, landing in New Zealand. On arrival he was appointed and for several years was manager of the Clydevale ranch, where general agriculture and breeding of live stock of all kinds was carried on upon a princely scale. Anxious for variety and fresh knowledge he next steered his bark for Australia, where he spent twelve months devoted exclusively to traveling and inquiring into all the live stock industries that continent could boast. Leaving Australia, he crossed the Pacific, landing in San Francisco, taking a stockman's glance in passing at the Fiji and Sandwich Islands. On American soil he was first appointed by the San Francisco

Wool Growing Association as manager of the Santa Cruz range, with 50,000 head of sheep in charge, but tiring of isolation he sought a new home in Oregon, where, under Messrs. Reid & Ladd of Portland, he built up a magnificent establishment, stocking it with all the good things that money could buy. We next find him manager of several live stock establishments in the western states and Canada, and he was chosen by T. W. Harvey of Chicago as manager of the Turlington herds and flocks. Under his fostering care and fame of that establishment steadily increased and "Uncle Willie's" great victories in 1897 at the fat stock shows of Kansas City and Chicago with Turlington entries he had fed form an important part of fat stock show history. He there gained sixty-one out of sixty-three awards—a record unprecedented. Mr. Watson was the only man within our knowledge who has ever made the rounds of the world in the capacity of judge of stock and as an exhibitor, having gained laurels in both capacities on three continents.

Mr. Watson died November 1, 1897, in the employ of A. P. Grout, Winchester, Illinois, a "doddie" enthusiast to the very last, although he was one of the most unique characters ever known to the live stock world, a man of vast value in his lifetime to the beef cattle and mutton and sheep industries.

His success as a feeder was outstanding and yielding to repeated requests for a full statement of his methods he gave this to the world in the Gazette of December 26, 1888. His methods have formed the basis of the education of many of our successful cattle feeders the past twenty years. In response to a request we print Mr. Watson's statement in full:

"*Introduction.*—As an introduction I may say the first step is to breed the animal right; it matters little what you feed, if you have not the right sort to consume it. Before commencing training the first point to inquire into is whether the animal be worthy or not to entitled the owner to lavish the expense and trouble on him so necessary to bring him out a prize winner in first class company. If you have a doubt about it throw him aside at once; if it is in the animal go at him and lose not a day nor an hour in sending him to the front.

"*Formation*—Before the calf is a week old a practical eye can tell whether he is likely to turn out a good one or not. Get its bone formation right at birth, then you have a foundation to build on; if faulty at start, then your pillar is worthless; no feed will upset the bone structure. Suppose the calf pleases your eye, say about two weeks after birth, by his general character, style and proportions. First see that he has the sweet countenance and honest, broad face so marked in early maturing animals; then see that he is fully built behind the shoulder, just under the heart; if he is hollow there reject him. Then from hip bone center to bone of tail (center) he should measure the same number of inches as across the loin and from hip bone to hip bone. The bones on either side the tail should be set a good width apart; from the hip bones forward to the shoulders should be as broad as possible, with a little spring out or narrowing as may be. At once reject a calf narrow over the loin; as Mr. McComble used to express it, get them "well ribbed home"—compact; pay marked attention to the straightness and soundness of the hind legs, for as they give way, so will the back in proportion.

"As to the formation of shoulders there is much diversity of opinion. Some contend for the oblique shoulder like that of the horse, others again are in favor of the more upright or roomy shoulders. I myself think the truth lies midway between the two extremes of opinion. Shoulders closely laid back like a race horse's do not seem to me to be the right sort to admit of the free and thick growth of the best beef, while one that is moderately oblique and not tied up at the top of the blades, but rather loose and open, can fill up to perfect form, and give room for the development of the choicest meat. I always observe that it is the animals with rather free shoulders that have the heaviest forequarters. Let the vertebrae, or backbone, be a little higher than the scapula, or shoulder blade, then you are certain of beautiful crops and as a general rule a smooth, full chine.

"*Feeding.*—Feeding at the present date is more an art than a science. There are hosts of undiscovered facts in regard to it which, if known and rightly used, would redound to the advantage of stockmen. I am not a scientific man, merely a practical one; but as feeding is a branch of agriculture I feel convinced that before arriving at success we farmers and stock-raisers must know something of agricultural chemistry, and before we can study it successfully we must know at least the rudiments of chemistry itself. By a little research we can learn to class the protein or muscle-forming foods from the carbo-hydrate or fat-forming elements. After mastering this most essential point then you can form your proper nutritive ratio, which means the bulk of the digestible protein in comparison to the digestible carbo-hydrates and fat. Much can be learned by taking the monthly live weight of your cattle. If you have had occasion to make a change of feed your scales will prove truthful and you can learn at once whether that change has been to your advantage or not. Remember the true feeding value of an article of cattle food can be determined only by actual trial, for in the long run there is no chemist like digestion.

"In feeding we must all be aware that as a general rule farmers make the feeding day too short, consequently the night too long. I mean by that the animals are only fed three times daily—say at 6 or 7 in the morning, at 12 noon, and between 5 and 6 in the evening. Now cattle to be made most of—I speak of show cattle especially—ought to be fed four times a day, viz.: at 5 a. m., at 11 a. m., at 4 p. m., and a good hot supper at 8 o'clock at night. The ingredients for supper should be the same in substance as those which I am about to detail. The several items should be measured into a pail, adding flaxseed and molasses gravy, and over all let there be a handful of finely cut hay chaff, so as to absorb all steam. Now pour on boiling water and cover well with a sack, so as to prevent evaporation and waste. Before feeding mix the chaff with the mess. Do this about 4 o'clock in the afternoon and the mush will be in a nice milk-warm state for feeding by 8 at night. The cattle will eat it greedily and rest till 5 the following morning. Always put a little sweet hay beside the animal, so that he may eat if he feels so inclined. If you have a number of cattle in training it will be found most convenient to have a large water-tight feed box for scalding the meals.

"*Feed in Small Compass.*—The minute subdivision of food enables the stomach to contain at least 25 per cent more in quantity than with loose hay or large roots, so always present your food in the smallest possible compass requiring the least mastication. Every half hour saved in feeding is so much added to rest—a most important item in fattening. Dry, finely cut chaff mixed with the meals will prevent laxity and flatulence, producing also a sufficient and healthy excitation to the stomach, while it will afford to the gastric juices a ready access to every part of the mass of food. Cattle lay on a much larger quantity of flesh in comfortable quarters than they do in cold. This is consistent with the well-known fact that the rapid abstraction of caloric by a cold atmosphere renders necessary a large quantity of food to keep up the supply of carbon; but while there is warmth there must be ventilation.

It may be interesting to my readers to know how closely my system of feeding agrees with the German standards. I present a table giving the average amount of digestible matter in the food used.

PERCENTAGE OF DIGESTIBLE MATTER IN FOODS USED IN 100 POUNDS.

Feeding Stuffs.	Protein	Carbohydrates	Fat
Oats	9.5	44.4	3.9
Wheat	9.2	64.9	1.4
Corn	8.4	64.9	4.7
Bran	12.6	44.1	2.9
Barley	9.7	63.2	1.3
Peas and beans	19.7	55.0	1.5
Flaxseed	18.9	19.9	32.4
Molasses	----------	4.8	----------
Beets	1.2	4.8	----------
Chaff-clover	6.9	38.5	1.2

From this table we construct the second which presents the amount of protein, carbo-hydrates, and fats in the several food articles.

AMOUNT OF FOOD GIVEN A 1,200 POUND STEER DAILY.

Feeding Stuffs.	No. lbs.	Protein	Carbohydrates	Fat
Oats	4	.380	1.78	.153
Wheat	4	.368	2.60	.056
Corn	4	.336	2.60	.188
Bran	4	.504	1.76	.116
Barley	4	.388	2.53	.052
Peas and beans	4	.788	2.20	.060
Flaxseed	1	.189	.20	--------
Molasses	1	----------	.60	--------
Beets	4	.048	.19	--------
Chaff	4	.276	.54	.048
	34	3.277	16.00	1.000

"It will be seen that our 1,200-pound steer consumes daily 3 277 pounds of protein, 16 pounds of carbo-hydrates and 1 pound of fat. From this we calculate that for each 1,000 pounds weight of animal fed we supply 2.73 pounds of protein, 13.33 pounds of carbo-hydrates and 0.83 pounds of fat. This agrees so closely with the German standard that it might appear that I had got my ideas of the proper portions from them. This is not so, as it is only a few months ago that I learned the German standard, whereas I have worked on my principle for many years, and as yet I see no good reason for change in favor of the German.

"*Frequency in Feeding.*—Frequency in feeding with as much variety as possible in the bill of fare and no greater quantity given at each time than will be directly consumed are in my belief the first principles to successful feeding. To supply more than will be eaten at once is not only wasteful, but it encourages the animal to become dainty of its food, which bad habit in the end prevents the eating of a proper quantity. As soon as the animal has finished feeding let the man in charge clean most scrupulously the feed boxes, as daintily fed animals loathe food that has been blown upon. It is seldom two animals feed alike, so the herdsman or feeder must study exactly the quantity each animal will consume. If they do not get sufficient they will remain restless and not lay on flesh as they ought to; if they are overfed they become disgusted and refuse to eat. Many animals, if judiciously handled, will eat a heaped pailful of my mixture four times a day; that is, from eighteen to twenty pounds at each feed.

"It is very necessary to question your stockman daily as to the condition and health of the animals, as they are apt to forget to tell you if an animal shows any deviation from his healthy habits. Should sickness appear, avoid as much as possible the use of medicines. Overfeeding is generally the cause of sickness in pampered animals, and in such cases a good dose of flaxseed oil will give relief, but there is nothing to compare with diet. Keep the animals short of feed for a day or two and they will soon return to their normal state.

"*Feed Ration.*—Now for the main point—the feeding ingredients, In order to make the calculation simple of the measurement and mixing of the several meals we will consider their relative weights by the pound as follows:

1st. One pound oats, crushed.

2d. One pound barley, crushed.

3d. One pound maize, or Indian corn, crushed into meal.

4th. One pound wheat, crushed.

5th and 6th. One-half pound peas, One-half pound beans, crushed into meal. (One pound peas can take the place of both.)

7th. One pound bran.

8th and 9th. One pound best flaxseed, ground into flour and one pint molasses; mix both together for soup, and divide into four portions, one-quarter for each feed.

10th. One double-handful of sweet hay chaff given in every feed, so as to promote digestion and rumination.

11th. One double-handful of pulped roots—about four pounds—in every feed, mixed with the grains.

"Mix all thoroughly together, and feed the animals four times a day, according to appetite and constitution. Water four times daily, and always before feeding; never fail to take the chill off the water during winter; let the temperature be about 50 degrees Fahrenheit. Make soup of the flaxseed and molasses; put as much water in a pail as you think will be necessary to saturate the entire mess of meal, etc., with the soup, taking care not to make the meals sloppy. After thoroughly mixing the soup with the meals your ration is fit for use.

"*Preparation of Gruel.*—In preparing the flaxseed gruel the proper way is to drop the flour with one hand into a pail with sufficient water for admixture, all the time stirring with the other hand to prevent lumping; allow the flaxseed plenty of time to soak and become jelly-like. Once a day will be sufficient for the preparation of the jelly or gruel in cold weather, but in warm weather twice a day will be found necessary on account of souring. Keep the soup pails sweet and clean. Before adding the flaxseed gruel to the grains, add the molasses allowance at the rate of one-quarter pound for each animal at a feed, stirring the two well together; now pour the contents over the feed and mix most thoroughly; cover up with sacking and kneed well down before feeding. Again rub the compound well through your hands; by this time it ought to have soaked for several hours, and should feel gritty and dry to the touch. As soon as you have fed the animals at once get ready the forthcoming feed, mixing in the usual manner, thereby giving the grains sufficient time to absorb the soup and cause slight frementation. If an animal will consume more than one pound of flaxseed and one pint of molasses daily, then by all means let him have it, taking care not to overfeed, in case of their becoming too laxative. I never use oil-cake for show-yard preparation; as a general rule it is much adulterated and the precentage of oil is very low. Flaxseed contains all its original good properties. From observation I have found one pound of flaxseed equal to about four pounds of average cake.

"It is almost needless to add that all feed-stuffs must be of the best quality. Never think of expense; if you do you will never make a successful exhibitor. It is unnecessary to measure out the daily proportions of meal, etc., for each animal; the better plan is to weigh a week's supply at a time and sack it up. Be most particular as to mixing so that each animal may get equal proportions of the several ingredients. I never use condiments. One of the foremost secrets in feeding is to make a food both palatable and digestible; it is not the total amount of food eaten, but the amount of digestible matter which it contains, that determines the food value of a ration. Mixing as I do I am confident it renders the mass more easy of digestion, enabling the animal to extract the maximum of nutritive material the ration contains. Owing to the high percentage of protein or muscle forming elements in bran and shorts, some may suppose I have been rather sparse with them in the feed mixture, but you must consider that the cattle have the full benefit of the bran or husk from the ground wheat in addition to the prescribed allowance. As for the shorts I consider that contained in the bran and wheat quite sufficient. Shorts, like oatmeal, are very free from crude material such as the skin or husk of the grain, consequently they are much more indigestible, and, therefore, cannot give results equal to the wheat with its shell, or peas and oats with their rougher skins.

"*Summer Treatment.*—In summer give the animals a moderate allowance of cut-clover or green corn-fodder.

"*Roots.*—These give a great stimulus to feeding and digestion, yet I would not use them to excess. A few judiciously fed as a relish or appetizer to the meals is, I think, sufficient. There is little solid matter in turnips. Analysis teaches us that turnips contain 90 to 92 per cent of water, and mangolds 88 per cent; so a bullock as they used to be fed in my younger day in Scotland, consuming 150 pounds of turnips daily, was compelled to take thirteen and a half gallons of water with fifteen pounds of dry food. With cold weather and roots at a very low temperature, imagine what an absorption of caloric must be taken from the stomach and system of the ox, which has to raise to the digestive temperature thirteen and a half gallons of water at 40 or 50 degrees. Before long ensilage will take the place of roots.

"*Water.*—As I have stated, you should offer the stock water four times daily. Always water before feeding, never after; and let me here advise that wherever at all practical every one handling stock should take off the chill from the drinking water during the winter months. Heating apparatus is now contained in small space, and is moderate in price.

"*Exercise.*—It is a general practice among exhibitors of stock to run their show cattle at pasture during the night, instead of keeping them in roomy, well-littered boxes and soiling them in moderation with clover and other green feed. This turning-out system I thoroughly condemn; it is the cause of great bodily waste and loss of fat; yet at times there may be some special reason for it, such as an animal's going off his feed or becoming rickety on his legs. My system is to keep the animals in boxes all day and turn them into an open court for two hours in the cool of the evening; then they will give themselves abundant exercise and be glad to return to their boxes with a keen appetite for their hot supper. When out take care they do not get access to anything they can eat. A show animal should never be allowed to consume any food except what is laid before him. By exercising in a yard they have no opportunity of resting on the cold ground, of exposures to cold dews, or wet nights, or filling themselves with washy grass, depriving them of their appetite and keeping them from consuming a full amount of grain-feed. I consider that keeping cattle housed by day and night is one of the great secrets of getting them in first-class form. Have their beds well littered and comfortable for them on their return to their boxes, so that they may enjoy their rest and groan that sweet music of contentment so charming to the breeder's ear.

"*Calf Feeding.*—In forcing a calf there is no way so satisfactory as abundance of milk, pure and simple, from the udder. If the calf's dam has not sufficient to raise him or her to perfection then have a nurse in addition; if one is not sufficient give two, and if necessary add a third. Always teach your show calves to steal; that is, to suckle every cow they are offered. The advantage of this is evident. When required they will take to any cow, whereas if you confine them to one nurse and wish to add to their milk they will, after four or six months of age, invariably refuse the fresh udder. Teach them to steal and all udders are alike to them. Be particular as to the formation and quality of the calf's dam. Always test the dam's or nurse's milk to see if it is sufficiently rich; if not, change at once. Some feed by hand. This system has one great advantage. You can carry on the feeding as long as you please, and can enrich the milk by adding scalded oil-cake, flaxseed tea, eggs, or molasses, yet I put most faith in suckling the youngster till he is eight or ten months old. Wean your calves by degrees; that is, if they have the use of two nurses deprive them of only one at a time. Feed the calf judiciously and frequently, giving small quantities at a time; rather under than overfeed. Give them the same mixture that I have prescribed for the show animals. Let them have flaxseed gruel and molasses gravy in their ration, taking care not to overfeed and induce scouring.

"*Feet.*—Be most particular about the feet of your show animals. Overgrown hoofs are a great eye-sore and excessive growth invariably throws the animals off their hocks and hind legs. Feet should be frequently dressed and kept in good shape. The tools necessary are a heavy wooden mallet, an inch and a half chisel, a blacksmith's repairing knife, and a strong rasp or file.

"*Salt, Chalk, and Turf.*—Never allow the animals to be without a lump of rock salt within reach; also a lump of chalk. We all know the benefit of salt. It replaces the saline matter washed from the system through various channels. It also greatly increases the flow of saliva, therefore hastens fattening. Chalk counteracts acidity of the stomach, which animals are subject to when housed and kept on rich feed; and as the animals are deprived of access to earth or dirt you will find that the best substitute is to provide them with a piece of fresh turf twice a week, which they will greedily eat.

"*Temperature.*—Cattle thrive amazingly well at a temperature ranging from 45 to 50 degrees in winter. At 10 degrees higher they generally sweat profusely. A thermometer ought to be in every stable.

"*Clipping.*—When you have a few choice animals feeding during the winter months for any particular purpose, such as exhibition, it is a great advantage to have them clipped closely down their backs in a line with the lower part of their hip bones, and continuing along the upper part of the neck. Where warmly housed you will find this adds greatly to the comfort of the cattle; it will prevent profuse sweating and make easy the destruction of lice or other vermin.

"*Flies.*—Where you have plenty of food, warmth, and stock, you will have abundance of flies. During y season cattle do little good unless you at once check the nuisance. There is nothing so perfect in its results as darkness.

"*Showing in the Arena.*—Some time previous to exhibition be careful to train your stock to lead well and show themselves off to the greatest advantage. The nearer an ox is made to stand in his natural state the better—few can improve on Nature. Generally cattle in the show-ring are twisted into every conceivable shape. With their heads high in the air, their backs are consequently down, and their hind legs stretched far from under them. This false and airy position no doubt proves attractive to outsiders, but to the experienced judge it constitutes a great eyesore. It may be you occasionally hide a fault, but as a rule for every one you hide you add two.

"*Grooming.*—Grooming is as necessary with show-cattle as with horses. No matter how you feed, if you neglect elbow grease you will never join the front ranks, that is if the cattle are to show to perfection. In the case of cattle, grooming need not be commenced until within three months of the date of show. The cattle, it is presumed, have for several months previous been well fed and kept clean. In this condition to begin with, three months thorough grooming should put them in form. Half the game in showing cattle is to have them good in their coats, and stock-owners who fail to handle their animals so as to make them look their very best need not expect to win against those who do. Provide a warm rug, the same as is used for horse clothing; if one is not sufficient take two. Unless the weather is very cold the blankets do not require to be on all the time; they can be taken off during the night or during exercise. If the blankets are kept on fourteen hours daily they will soon do their work in taking the old hair off. If the weather is not frosty a good washing with carbolic soap and tepid water should be given at the commencement of the sheeting period; this will help to lessen the dandruff in the hide. If the bedding be well looked after once a month will be often enough to wash.

"A dandy brush, a thoroughly good soft brush, a chamois skin or piece of thick flannel, are the tools for putting on a polish, and the skin becomes soft under their treatment. A currycomb should never be used except for the purpose of combing down the hind parts when necessary, as the comb, except when very lightly applied, is certain to scratch and irritate the skin. In rubbing with the cloth it must be done quickly. It takes an enormous amount of work to make the skins of cattle shine, but nothing else will do it. For putting on the final touch no brush or cloth can equal the bare hand, hand-rubbing will also remove the old coat quicker than either comb or brush. Some fancy they can, with one washing and a few times grooming, do all that can be done, but this is a mistake. There is the greatest difference imaginable between the one that has been prepared by months of labor and the other hastily got up. The one article is genuine and will last, the other will fade between the stall and the ring.

"*Advice.*—I advise every exhibitor not only to be the feeder but the breeder of the animals he exhibits; then he has no divided honors, but harvests the full fruits of his enterprise. Masters, encourage a deserving feeder or herdsman; you are in a great measure in their power; show them you appreciate the struggle they are making for you. A few kind words, instead of grumbling, will often prove more acceptable to a faithful conscientious man than pecuniary reward. Master and man must work hand in hand. If the herdsman's labors are duly recognized, depend on it he will do his duty by you. Many of them are men of marked intelligence, anxious to attain eminence in their sphere of life. Lastly commence training your show animals in early youth, and in feeding let your motto be, Give the stomach a chance."

FEEDING AND MARKETING CATTLE.

One thousand stockmen from Missouri, Illinois and Iowa, feeding and marketing each year 2,000,000 cattle, have given to Dr. H. J. Waters, dean of the Missouri agricultural college, the results of their experiences. These experiences extend over a period of twenty years. Dr. Waters has carefully summarized them for the use of the students and practical feeders, and the results cover the entire range of feeding cattle for the market in the middle west.

"The professional feeder," said Dr. Waters, "is among the most intelligent of farmers, is a specialist in this particular branch of agriculture, has opportunities for checking up his observations and judgment with accurate data that men in other lines of farming do not have. He buys his cattle by weight, and has, therefore, an accurate knowledge of cattle at the time he begins his feeding operations. He always sells them by weight, and has, therefore, the weight of his cattle at the close and can easily determine quite accurately the gain. Furthermore, he buys a large portion, and frequently all of the feed used, which enable him to determine with a fair degree of accuracy the amount of feed consumed.

As an experimenter he is forced by the varying supply of different kinds of feed to vary the material fed from season to season, and hence one season, while he may naturally prefer a certain kind of grain or hay the supply is inadequate or the price is too high, and he adopts another. Normally he may prefer to feed his corn whole, but the price may be such as to warrant him in grinding it, and so on throughout the entire range of feeding. These conditions justify giving the conclusions of the practical feeder the greatest weight. The 1,000 men from whom the information has been secured include many of the largest feeders in three states.

Twenty questions were asked of the practical feeders. They included questions as to the length of the feeding period, most profitable seasons for feeding, winter feeding, shelters, varieties of feed, daily gain, margin of cost price necessary to make profitable, age of steers, method of feeding, experiences with various kinds of feed.

Beef Steer Most Profitable.—The most profitable class of cattle produced in Missouri, according to the answers of Dr. Water's questions, is the so-called dressed-beef steer, weighing from 1,200 to 1,400 pounds on the market. This is primarily because of the steady and uniform demand for cattle of this class on the market, rather than because this particular age or weight of cattle were produced more cheaply than lighter and younger ones. There has been during the past twenty-five or thirty years a marked change in the market demands of cattle. Formerly, added to the difficulties of making the cattle fat, was the further disadvantage that light weights would not bring as good a price as heavier weights.

Most of the feeders interviewed prefer cattle in the two-year-old form. This is evidenced by their stating that the average length of feeding period was six months, which is about the time required to make two-year-old cattle prime, is longer than is necessary for three-year-olds and is too short for yearlings or calves. It is further evidenced by the average weight which they considered they had found most profitable, viz., approximately 1,350 pounds. This is too light for three-year-olds and too heavy for yearlings or calves. Then, again, the question put to them directly as to whether they had found 1,500 or 1,600 pound steers profitable as a rule, out of 721 replies, in round numbers, 70 per cent answered in the negative. All of this is further confirmed by the answer to the question direct as to what age they usually put their cattle on full feed. A study of this age summary is exceedingly interesting and instructive, as the results are very striking. For example, out of a total of 680 replies from Missouri, 257 or nearly 40 per cent, gave two years as the age at which their cattle were put on full feed, which would mean with a six months' feeding period, as was reported by them in answer to previous questions, thirty-months-old cattle when finished and ready for market. Thirteen per cent gave two and one-half years of age, and eleven per cent gave essentially the same answer, namely, "between two and three years, of age," as their preference. Thus more than 62 per cent of the Missouri feeders reported that they put their cattle on feed at between two and three years, as contrasted with less than four per cent who put them on feed as calves and less than four per cent who put them on feed at one and one-half years of age. What is true of reports from Missouri is essentially true of Iowa and Illinois.

Tendency to Baby Beef.—Whatever may be said about the production of baby beef, the feeders of the corn belt are not yet making baby beef. There has been, however, a very strong tendency in this direction within the last third of a century.

Baby beef is quite another thing from what it was even twenty-five years ago. Then a 30-months' old steer, weighing 1,400 pounds would have been classed as baby beef, and it would really have been a baby compared with the three, four and five year old bullocks then standard on the market, weighing from 1,600 to 1,800 or even 2,000 pounds, thick, fat and hard. G. A. Bradford, a veteran feeder of Boone county, reports the sale in the early 60's of a car load of cattle, weighing an average of more than 2,500 pounds, for $11 per hundred, and adds that at that time the larger and older the cattle the higher price they brought.

Our point of view has changed radically. The market demands have been revolutionized. These huge bullocks are no longer on the market and would be no longer in demand if presented. We have been gradually hastening our cattle to market, cutting down their ages and weights, until a twelve-months'-old steer, weighing 800 to 900 pounds, will bring as high a price as any other age and weight, provided he is fat and provided such calves be not offered in too great numbers. Size and weight do not any longer constitute a limitation to baby-beef production. According to our present interpretation of baby beef no steer would be so classed outside of his yearling form, and as a rule, the maximum weight is from 1,100 to 1,300 pounds.

This means that the feeding operation must begin with the calf at weaning time and continue without interruption until the calf is fat. Some even go farther and begin the feeding period as soon as the calf is old enough to eat and while it is still running with its dam, and place these animals on the market fully fat at the beginning of June or July, fourteen or fifteen months of age, and weighing from 800 to 1,100 pounds.

Heavy Cattle Made.—There are a number of reasons why the breeder still insists on making rather heavier cattle, notwithstanding the fact that it costs considerably more to carry them to this age and that it costs somewhat more per pound to finish them after they are brought to this point. First is the fact that the cattle feeder is, as a rule, not a cattle raiser. At least he raises a very small portion of the cattle he feeds. The cattle raiser, on the other hand, is, as a rule, not a cattle feeder, seldom feeding even those of his own raising. The raising of cattle and the fitting of them for the market are two separate and independent operations, conducted as a rule by two different men, each operating independently of the other and the one not especially interested in the scope or outcome of the other's operations.

The cattle feeder is interested in the cattle raiser only to the extent of having him supply him with animals of the proper quality and at such prices as will enable him to fit them for market with a profit. This means that under the conditions prevailing in the feeder and stocker market, in recent years at least, the younger animal in an unfinished condition sell for enough more per pound to, in a considerable measure, counterbalance any advantage it may possess in the cost required to make it fat. Or, stated differently, the older animals may be bought for enough less per pound to overcome a considerable part of the excess cost per pound required to finish them for the market. Or, in feeders' parlance, the margin of profit in feeding older cattle is greater than in feeding younger ones.

This may be illustrated by statistics furnished Dr. Waters by a number of experienced feeders in Central Missouri who were interviewed on this point. Taking calves as a quality which in the fall (October 1) would be worth say five cents per pound, or would bring twenty-five per head, as a basis, cattle of the different ages could be bought, one year with another, at the following prices: Yearlings, $3.75 per hundred; two-year-olds, $4.00 per hundred; three-year-olds, $4.25 per hundred.

These same cattle the next spring would stand the feeder, in the judgment of these men, on the basis of the same market as in the fall, as follows: Yearling (which are the calves referred to above), $5.00 per hundred; two-year-olds, $4.50 per hundred; three-year-olds, from $4.75 to $5.00 per hundred.

Older, Less Fat Required.—According to Dr. Waters, it seems to be a well-established law in the cattle trade that the older and larger the animal is the less fat beyond a certain point it is required to sell well up toward the top of the market for its class. It not infrequently occurs that heavy three-year-olds will bring the top of the market with heavy cattle, while a yearling equally as fat would not sell within fifty cents of the market and might even be classed on the market as a well-advanced feeder rather than as a fat steer. One cannot fail to be impressed with the unanimity with which these men agree that the so-called dressed beef steer, or the two-year-old, weighing from 1,300 to 1,400 pounds is in the most active demand and sells at a better price one day with another, year after year, than any other age or weight of similar quality and of equal finish. It is furthermore significant that the feeder has said with striking unanimity that the two-year-old steer weighing between 1,300 and 1,400 pounds has returned him the greatest profit.

If the raiser and feeder of cattle were the same man, it would be but a short time until the cattle would be going to market at from fourteen to eighteen months of age, instead of from thirty to thirty-six months of age, under the conditions now prevailing in the corn belt. Already there has been a marked tendency on the part of the farmer of the high priced land in the corn belt to go out of the business of raising beef cattle. This has been practically true under the influence of the high prices of corn that have prevailed in recent years, and a steady advance in the price of land and labor. This is very strikingly true of the best corn regions of Illinois, Missouri, and Iowa, and has forced the feeder to rely more and more upon western or range cattle, which in the meantime have been greatly improved in quality, so that a two-year-old range steer now is as large and almost as mature in form as was the three or four-year-old steer of twenty years ago from the same region.

The season of the year exercises a profound influence upon the economy with which steers may be made fat. Few feeders express a preference for winter feeding. More than half the feeders express an unqualified preference for summer feeding; thirteen per cent prefer spring and summer; eight per cent prefer summer and fall; eleven per cent prefer fall. Thus practically ninety per cent express a preference for feeding other than winter, which, broadly speaking, means a preference for summer feeding. The advantages of summer over winter feeding are summarized by Dr. Waters thus:

1. Gains made in summer require less grain.

2. The gains are made more rapidly, so that the animal is finished in less time.

3 Steers may be made thick and prime on corn and grass in summer, without the use of expensive supplementary feeds like cotton-seed meal or linseed meal, and will carry to market a lustrous coat. It is impossible by the use of corn and such roughage as timothy or prairie hay to bring animals within a reasonable time to anything like the degree of fatness that may be easily made with corn and grass, and they will never carry the blood that is put on by full feeding of pasture. Presumably the green grass contains sufficient protein to give the high finish and excellent coat required of animals that bring a high price. To approximate this finish in winter feeding requires the use of a considerable quantity of expensive grain like cotton-seed meal or linseed meal, or the use of clover, cowpea or alfalfa hay or roughage.

4. *More Profitable in Summer.*—The hog makes larger gains and shows a much lower death rate in summer than in winter feeding.

5. There is a considerable saving in labor in summer feeding over winter feeding in view of the fact that only the grain has to be hauled and in view of the further fact that as a rule the steers need to be fed

but once a day, either about sunrise or sunset. To offset this, however, labor on the average farm is scarce and much higher priced in summer than in winter. The manure is scattered by the cattle themselves and the hauling of it out upon the ground is dispensed with. Grass is cheaper than hay, as has already been pointed out and make better gains. The handling of the roughage is likewise disposed of.

In the latitude of Missouri the winter weather is quite variable and this is particularly true of February to the middle of April. It is particularly costly to attempt to finish cattle in this season. Fairly rapid and economical gains can be made in this variable weather on those cattle that have been freshly put on feed, but when the steers approach the finishing period, when their appetities become dainty and when at best it is difficult to induce them to eat enough to make substantial and economical gains, the disturbance of the weather is particularly noticeable and ofttimes when cattle are almost finished they will stand for thirty and sometimes sixty days without making scarcely any gain at all. This is quite likely to be true if the lots are muddy and if the roughness is not particularly palatable and is fed in the open, where it is drenched with rain soon after it is put in the rack.

The most favorable portion of the winter season for feeding is in the late autumn and during December and January, unless these months be wet or variable. Many of the most successful feeders do not finish their cattle in these unfavorable parts of the winter, but utilize them for getting the cattle started or "warmed up," as they express it.

These replies, received from the 1,000 Missouri, Illinois and Iowa stockmen, will be summarized by Dr. Waters in a bulletin to be issued, showing the results of experience in beef production in the corn belt, together with a summary of some of the feeding experiments conducted in the Missouri Agricultural college experiment station.

AUCTIONS OF PURE-BRED BEEF CATTLE IN 1907.

(From the Breeders' Gaette.)

Annual summary of the public sales of pure-bred beef cattle held in the United States during 1907.

SHORT HORNS.

Date	Seller and Place	Kind of Sale	No. Sold	Total Price	Average Price
Jan. 16	Various breeders, Grinnell, Iowa	Comb	64	$ 5,528	$ 86.40
Jan. 23	Various breeders, Denver Colo.	Comb	46	6,734	146.40
Jan. 29	F. A. Edwards, Webster City Iowa	Draft	32	6,020	188.15
Feb. 20	J. F. Stodder and others, Wichita, Kan.	Draft	40	5,115	127.85
Feb. 22	J. H. Denher, Cascade, Iowa	Draft	40	2,943	72.00
Feb. 21	Jo Daviess Co. (Ill.) Cattle Breeders' Association, Galena, Ill.	Comb	60	3,900	65.00
Mar. 1	Good, Ryden, & Failon, Galesburg, Ill.	Comb	51	8,925	175.00
Mar. 5	J. A. Countryman & Son, Rochelle, Ill.	Draft	39	3,982	102.25
Mar. 12-13	C. R. Steele, Ireton, Iowa	Disp	90	18,290	203.20
Mar. 14	Carrier & Son, Newton, Iowa	Disp	27	3,118	115.50
Mar. 20	Various breeders, Ft. Worth, Tex.	Comb	39	3,440	88.20
Mar. 21	T. K. Thompson & Sons, Manhattan, Kan.	Draft	47	5,835	158.00
Mar. 28	N. P. Clarke, So. Omaha, Neb.	Draft	54	17,605	325.90
Apr. 2	W. M. Randel, Bainbridge, Ind.	Disp	24	3,280	136.65
Apr. 9	H. F. Brown, Minneapolis, Minn.	Draft	38	12,075	317.70
Apr. 10	F. W. Harding, Waukesha, Wis.	Draft	48	18,025	375.00
Apr. 11	H. S. Bright, Versallies, Ky.	Disp	32	8,630	270.00
Apr. 13	Hill, Hanna and Cowley, Fredonia, Kan.	Comb	37	6,060	163.80

AUCTION OF BEEF CATTLE—CONTINUED.

Date	Seller and Place	Kind of Sale	No. Sold	Total Price	Average Price
Apr. 22	Geo. Bothwell, Hamilton, Mo.	Disp	59	9,400	159.30
May 8	A. Chrystal, Marshall, Mich.	Draft	74	17,680	210.00
May 10	Various breeders, Indianapolis, Ind.	Comb	44	4,930	112.00
May 23	Forbes, Prather & Hanna, Chicago	Comb	34	9,935	292.00
May 24	J. W. Palmer & Son, Albion, Ind.	Disp	33	3,775	114.00
May 29	Harvey, Wray, Maryville, Mo.	Disp	45	4,500	100.00
May 31	W. A. Forsythe, Greenwood, Mo.	Draft	41	5,450	133.00
May 31	H. G. Teel, Rushville, Ill.	Disp	44	2,650	60.00
June 4	M. E. Jones, Williamsville, Ill.	Draft	41	12,635	314.00
June 11	Frank O. Lowden, Chicago	Draft	61	38,635	633.35
June 12	Various breeders, Rossville, Ind.	Comb	40	3,537	88.50
June 13	Thomas, Jameson & Mitchell, Kansas City	Draft	51	10,330	202.55
June 13	Andrew Wilson, Argenta, Ill.	Draft	37	4,160	80.00
June 20	S. R. Quick & Sons, Indianapolis	Disp	40	4,560	104.00
June 21	Jos. Duncan, Osborn, Mo.	Draft	43	7,395	172.00
Aug. 15	W. M. Dewess & Son, Monticello, Ill.	Disp	27	2,902	107.00
Sept. 3	W. H. Schafer, Keensburg, Ill.	Draft	46	5,385	117.00
Sept. 5	Various breeders, Hamline, Minn.	Comb	37	4,921	133.00
Sept. 10	C. C. Bigler & Sons, Victor, Iowa	Draft	76	13,135	172.70
Sept. 11	Various breeders, Victor, Iowa	Comb	44	3,300	75.00
Sept. 17	Dr. H. K. Givens, Fayette, Mo.	Draft	49	7,680	156.70
Sept. 26	C. L. McClellan, Lowden, Iowa	Draft	37	4,020	108.90
Oct. 1	Jeffrey & Wallace, Ainsworth, Iowa	Draft	40	2,940	73.25
Oct. 2	Woods Investment Co., So. Omaha, Neb.	Comb	38	8,740	230.00
Oct. 2	G. P. Tyrrell & Son, Oxford Junction, Iowa	Draft	40	3,840	96.00
Oct. 2	J. M. Stewart, Ainsworth, Iowa	Draft	28	2,135	76.25
Oct. 3	Gray & Rickey, Columbus Junction, Iowa	Comb	43	3,010	70.00
Oct. 7	L. B. Converse, Maryville, Mo.	Disp	62	8,570	138.25
Oct. 8	Ira Cottingham, Eden, Ill.	Draft	30	1,775	88.75
Oct. 9	F. A. Schafer & Son, Estherville, Iowa	Draft	40	4,895	122.35
Oct. 10	N. P. Ewing, McLean, Ill.	Disp	40	4,172	104.00
Oct. 10	Burge & Brown, Mt. Vernon, Iowa	Comb	42	4,000	95.00
Oct. 11	Dr. J. S. Wilson, Macy, Ind.	Draft	27	2,215	83.00
Oct. 15	J. A. Kilgour, Sterling, Ill.	Draft	33	4,065	123.00
Oct. 17	Various breeders, Kansas City	Comb	51	11,945	234.20
Oct. 17	Hale and others, Anamosa, Iowa	Comb	52	6,575	126.45
Oct. 17	C. A. Branson, Cadiz, Ohio	Draft	25	2,000	80.00
Oct. 18	Dawdy & Son, Galesburg, Ill.	Draft	44	7,645	174.00
Oct. 22	W. H. Michael, Lowell, Ind.	Draft	30	1,779	59.30
Oct. 22	Walpole Bros., Rock Valley, Iowa	Draft	46	8,085	175.75
Oct. 23	W. J. McLean, Rock Valley, Iowa	Draft	40	4,627	115.65
Oct. 23	Forest & Dunham, Miles, Iowa	Draft	39	6,723	172.40
Oct. 25	Hart-Alexander, Edinburg, Ill.	Comb	40	9,550	238.75
Oct. 26	J. H. Miller, Shelbyville, Ill.	Draft	26	3,090	118.00
Oct. 26	Green Bros and others, Farmland, Ind.	Comb	43	6,111	142.15
Oct. 29	John Rasmess, Lake City, Iowa	Draft	28	7,745	276.60
Oct. 30	Hector Cowan, Paullina, Iowa	Draft	42	7,540	180.00
Oct. 30	Renick-Hall, Paris, Ky.	Comb	47	3,052	65.00
Oct. 31	H. G. McMillan, Rock Rapids, Iowa	Draft	41	4,487	109.45
Nov. 5	E. D. Ludwig, Sabetha, Kan.	Draft	26	2,236	86.00
Nov. 6	Purdy Bros., Kansas City	Draft	49	6,970	142.25
Nov. 7	Flynn Farm Co., Des Moines, Iowa	Draft	45	13,250	294.45
Nov. 8	N. A. Lind, Rolfe, Iowa	Draft	55	13,815	251.20
Nov. 9	Anton Williams, Gilmore City, Iowa	Draft	47	4,393	95.50
Nov. 9	F.M. Marshall, Kansas City	Disp	25	4,015	154.40
Nov. 13	Howard Cattle Co., Newman, Cal.	Draft	50	4,310	86.40
Nov. 14	Dr. A. C. Berry, Unionville, Mo.	Draft	37	4,105	110.95
Nov. 19	B. H. Hakes, Williamsburg, Iowa	Draft	40	5,970	149.25
Nov. 22	Thompson-Cookson, West Liberta, Iowa	Comb	13	7,535	125.00
Nov. 23	Innes & May, Granville Center, Pa.	Draft	40	5,345	133.00
Nov. 27	Isaac Argenbright, Blandinsville, Ill.	Disp	24	2,004	83.50
Dec. 3	Various breeders, Chicago	Comb	50	13,825	276.50
Dec. 11	McDermott, Anita, Iowa	Draft	33	5,570	168.80
Dec. 10-11	E. Funke, Greenfield, Iowa	Disp	98	14,770	150.70
Dec. 12	Hancher and others, Rolfe, Iowa	Comb	50	5,000	100.00
Dec. 12	Various breeders, Freeport, Ill.	Comb	38	2,935	77.25

3,608 head sold for $577,799; an average of $160.15.
*Polled Durhams included.

HEREFORDS.

Jan. 17	Hoosier Farm Co., Spencer, Ind.	Disp	35	4,340	124.00
Jan. 22	Various breeders, Denver, Colo.	Comb	48	5,640	117.65
Jan. 22-25	Various breeders, Denver, Colo.	Comb	64	8,036	125.60
Jan. 23	Various breeders, Wyoming, Ill.	Comb	21	1,312	62.00

AUCTIONS OF BEEF CATTLE—HEREFORDS—CONTINUED.

Date	Seller and Place	Kind of Sale	No. Sold	Total Price	Average Price
Jan. 23	D. W. Ohl, Iowa City, Iowa	Draft	30	3,040	110.35
Feb. 1	Avery & Hines Co., East St. Louis	Disp	63	7,980	127.00
Feb. 12	Various breeders, Chicago	Comb	53	5,745	108.00
Feb. 21	Jo Daviess Co. (Ill.) Cattle Breeders' Association, Galena, Ill.	Comb	4	277	69.25
Feb. 21	Various breeders, Wichita, Kan.	Comb	37	2,331	63.00
Mar. 7	G. W. Graves, Bunker Hill, Ind.	Disp	47	5,190	110.00
Mar. 12-14	Various breeders, Kansas City	Comb	121	13,815	114.75
Mar. 28	F. A. Nave, Attica, Ind.	Draft	70	16,065	229.50
Apr. 3	Edmonds, Shade & Co., and Stanton Breeding Farm Co., Sioux City, Iowa	Draft	38	4,570	120.00
Apr. 4	W. G. Swinney, Kansas City	Disp	60	6,695	111.60
Apr. 4	G. J. Anstey, So. Omaha, Neb.	Draft	46	4,005	87.00
Apr. 9	Giltner Bros., Nashville, Tenn.	Draft	43	7,688	178.80
May 2	Gudgell & Simpson, Kansas City	Draft	47	7,030	149.70
May 15	Mrs. K. W. Cross, Emporia, Kan.	Disp	64	8,250	128.95
June 13	G. H. Hoxie, Thornton, Ill.	Draft	42	12,970	308.80
June 20	Sotham Co., Kankakee, Ill.	Comb	31	2,480	80.00
July 9	Sotham Co.,* Kankakee, Ill.	Draft	13	2,915	225.00
Sept. 4	Various breeders, Hamline, Minn.	Comb	54	3,196	59.20
Sept. 27	F. D. Woods, Muscatine, Iowa	Draft	88	4,840	55.00
Oct. 15	Various breeders, Kansas City	Comb	51	7,560	148.25
Oct. 22	Hemenway and others, Steward, Ill.	Comb	48	5,300	107.00
Oct. 23	Minier Bros., Craig, Neb.	Draft	37	4,775	129.00
Dec. 4	Various breeders, Chicago	Comb	46	6,220	135.20
Nov. 26	W. W. Wheeler, Harlan, Iowa	Draft	20	2,154	107.70
Nov. 28	M. Boyd Co.,* Windsor, Ont.	Draft	37	3,500	94.00

1,358 head sold for $168,009; an average of $123.70.
*Polled Herefords.

ABERDEEN-ANGUS.

Jan. 16	H. J. Hess, Waterloo, Iowa	Draft	47	7,055	150.00
Jan. 17	A. G. Leonard, Chicago	Disp	50	4,135	82.70
Feb. 15	Rosenfeld & Siverly, Kelley Iowa	Disp	40	4,630	115.75
Apr. 24	Allison, Fisher and Freeman, Homer, Ill.	Comb	62	5,860	94.00
May 1	Various breeders, Chicago	Comb	66	6,470	98.00
May 28	C. J. Martin, Adaza, Iowa	Draft	52	14,020	269.60
June 4	Lakeside Farm, Storm Lake, Iowa	Draft	48	4,265	88.85
June 5	A. C. Binnie, Alta, Iowa	Draft	38	11,610	305.50
June 6	James Williams, Marcus, Iowa	Draft	43	6,580	153.00
June 19	Various breeders, Kankakee, Ill.	Comb	46	3,325	72.20
June 25-26	L. H. Kerrick, Bloomington, Ill.	Disp	243	25,486	105.00
Aug. 22	A. P. Grout, Winchester, Ill.	Draft	40	6,080	152.00
Oct. 29	Miller-McMurray, Newton, Iowa	Comb	34	4,440	130.60
Oct. 30	W. H. Goodwine and others, Chicago	Comb	66	6,120	92.70
Nov. 5	J. O. Strubinger, Barry, Ill.	Disp	56	8,409	150.00
Nov. 20	Collins-Dysart, Nachusa, Ill.	Disp	82	5,330	65.00
Nov. 21	W. A. McHenry, Denison, Iowa	Draft	44	14,250	324.00
Dec. 5	Various breeders, Chicago	Comb	62	12,730	205.30

1,119 head sold for $150,795; an average of $134.75.

GALLOWAYS.

Jan. 24	Various breeders, Chicago	Comb	35	4,181	126.70
Oct. 18	Various breeders, Kansas City	Comb	48	5,955	124.05
Dec. 6	Various breeders, Chicago	Comb	40	6,970	174.35

123 head sold for $17,106; an average of $139.05.

POLLED DURHAMS.

June 18	F. S. Hines, Indianapolis	Disp	29	5,545	191.00
June 19	Hadley and Marvin, Indianapolis	Draft	40	5,990	138.00
Nov. 23	Wash. Cortner, Farmland, Ind.	Draft	37	2,294	62.00

106 head sold for $13,829; an average of $130.35.

RED POLLS.

Apr. 3	Borden Stock Farm, Chicago	Disp	47	3,985	84.80
Apr. 4	Geo. H. Smith, Chicago	Disp	29	2,088	72.00
Dec. 6	Various breeders, Chicago	Comb	21	2,040	97.15

97 head sold for $8,113; an average of $83.65.

COMPARATIVE AVERAGES BY YEARS.

NAME OF BREED	1907			1906			1905			1904			1903		
	No. of sales	No. sold	Av. price	No. of sales	No. sold	Av. price	No. of sales	No. sold	Av. price	No. of sales	No. sold	Av. price	No. of sales	No. sold	Av. price
Short-horns	84	3,608	$160.15	95	4,210	$ 144.90	82	3,512	$ 139.75	65	2,755	$ 101.25	89	4,474	$ 174.15
Hereford	29	1,358	123.70	21	1,122	121.15	24	1,179	115.35	28	1,481	117.10	30	2,029	172.50
Aberdeen-Angus	18	1,119	134.75	25	1,259	154.90	22	1,084	130.35	21	932	132.80	14	1,041	220.15
Galloway	3	123	139.05	1	49	103.85	5	190	103.85	3	133	143.55	3	161	116.10
Polled Durham	3	106	130.35	3	81	143.40	1	34	231.75	7	286	100.00	8	282	155.55
Red Poll	3	97	83.65	1	30	121.00	3	94	109.80	1	48	70.00	1	22	145.00

A SUCCESSFUL HOG AND SEED-CORN FARM.

U. S. Department of Agriculture, Farmers' Bulletin No. 272, By W. J. Spillman.

Nearly all highly successful farms are unique in their management. In the absence of a science of farm management they represent systems wrought out by men of unusual energy and intelligence, who have gone resolutely about discovering and utilizing the full possibilities of their farms. These men have been governed largely by chance in the locations chosen, and to some extent in the type of farming followed. Hence it is they are distributed here and there over nearly the entire country and represent every type of farming that can be made highly profitable. From such men, who utilize the full possibilities of their land with a given system of farming, we are learning the facts which, when properly classified, will constitute the science of farm management.

Although such farms are widely distributed they are seldom plentiful in any section. Few men have comprehended a system of farming fully and developed it to its full possibilities. Cropping systems are seldom planned with a view to keeping the land busy and to meeting the exact requirements for highest success in the system followed. But when problems of this kind have been successfully met on a given farm, that farm becomes an object lesson of inestimable value to every farmer in the country. The lesson taught is not so much how to work to a given system as it is how to meet the problems that present themselves. Such farms demonstrate the great value of intelligent management as compared with hard work applied unintelligently. Their success, when the cause of it is understood, lends encouragement to other intelligent men.

THE SYSTEM OF MANAGEMENT.

The farm here described is that of Mr. W. H. Rowe. It is located in west-central Illinois, on dark prairie loam, and is devoted to hog raising and the production of fine seed corn. For roughage the hogs are provided with clover pasture in summer and soy bean or clover hay in winter. They are fed grain every day in the year. Before the business of growing seed corn was undertaken the amount of corn raised was nearly sufficient for the needs of the farm. At present a considerable quantity of grain and mill feed is bought to replace the seed corn sold and to supply the demands made by the increased number of stock kept.

The cropping system followed for several years past is as follows: (1) Corn (four-fifths) and soy beans (one-fifth); (2) corn; (3) oats; (4) clover.

Eighty acres of land in 4 equal fields are devoted to this rotation. The soy beans are cut for hay, which is fed to the hogs in winter. The clover is used for hog pasture. The oats are used as feed for the work stock and hogs. What hay is needed is bought. Not much is needed, however, in addition to the soy-bean hay, corn stover, and sheaf oats or oat straw produced on the farm. Last year 450 bushels of seed corn were sold at an average price of $1.82 per bushel. The remainder of the crop is fed, any deficiency being made up by purchase.

This system has been in vogue without essential change for ten years. Adjacent land, poorly managed, produces probably 35 bushels of corn per acre. During the past four years the average yield of corn on this farm has been 80 2-5 bushels per acre. During the past few years oats have lodged more or less, and Mr. Rowe is seeking a substitute for this crop.[a]

The yield of oats this year was 50 bushels per acre. On another similar farm owned by Mr. Rowe the yield was 63 bushels. The oats on the home farm were pastured to some extent this spring, because of a partial failure of the clover pastures. No commercial fertilizers have been used until this year, when a carload of ground phosphate rock was bought. It would seem that the system of cropping and the use made of these crops have so added to the nitrogen content of the soil as to render the plant food supply somewhat unbalanced for oats, though not for corn, as the corn crop can utilize the nitrogen to better advantage than oats.

The 80 acres are divided into 4 equal fields, all fenced hog tight. The fences consist of 5-foot woven wire, with a barbed-wire above it around part of the farm. The 4 fields meet at the center of the farm, where there is a well, a small feed yard for use in winter, and a shed for storing feeding troughs, etc., in summer. The feed yard is partially floored so that the hogs may eat without standing in mud during unfavorable weather in winter.

In addition to the 80 acres in the rotation, there are 31 acres of timber, 10 acres of permanent bluegrass sod (for 5 horses, 2 cows, and the brood sows in winter), and 10 acres devoted to orchard, garden, yards, and barn lot, making 131 acres in all.

Fifteen brood sows are kept. These are well-bred Duroc-Jerseys, a breed especially adapted to the production of large, late-maturing hogs. These sows farrow once a year, early in April, or after danger of severe winter weather is past. They raise 8 pigs to the litter on the average. In spring the 20-acre clover field is divided into 2 parts by means of a temporary wire fence 30 inches high. One part contains 12 acres and the other 8. One hundred and twenty yearling hogs, weighing about 200 pounds each, are placed in the 12-acre inclosure in early spring and remain until they are sent to market about August 1 to 10. The 15 sows and 120 pigs are turned into the 8-acre division, where they remain till the large hogs on the 12-acre division are marketed, when they are allowed the run of the whole 20 acres.

At first each sow and her litter receives 3 pounds of corn a day. Sometimes a little oats is substituted for part of the corn. The amount of grain is gradually increased until by fall each sow and litter receives about 17 pounds a day. The sows are allowed to wean the pigs of their own accord. At one side of the field a pen is constructed in such manner as to admit the pigs, but not the sows (fig. 1, B), and the pigs may thus be fed separately so as to insure their getting a proper share of the feed

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[a] See proposed change in the cropping system, p. ——

By the end of summer the pigs weigh about 100 to 125 pounds each, most of this gain being due to clover.

On the approach of winter the sows are removed to the bluegrass pasture previously mentioned, where they are confined on 2 acres of land, with suitable shelters provided. The pigs are then penned on about 4 acres of the clover sod next the central well. The shelters which stood in the field during summer are moved to this pen.

The brood sows are fed in winter about 4 pounds a day of mixed grains. Last winter this consisted of ground rye, shorts, oil meal and corn. In the absence of rye, bran is used. They are also fed clover hay, a small crop of which is cut from the clover pastures. This amount of feed keeps them in thrifty condition, but does not fatten them.

The pigs in winter are fed soy-bean hay and an average of about 5 pounds of grain per head per day. During a portion of the time this grain consists of a mixture of about 3½ pounds of corn, ¾ pound of shorts and ¾ pound of oil meal per head per day. The amount fed is less in early winter and gradually increases as the pigs increase in size. By spring these pigs weigh 200 to 225 pounds each.

When clover pasture becomes available in spring these yearling hogs are turned into the 12-acre inclosure, while the sows and their new litters are given the remaining 8 acres. While the clover is at its best each of the 120 large hogs receives about 2½ pounds of grain daily. This amount is gradually increased until by August 1, when the large hogs are marketed, each is receiving about 4 pounds a day. The daily average for this period is about 3½ pounds. When sent to market these hogs weigh 325 to 350 pounds each. They are a fine, uniform lot, and always bring top prices in their class.

One of the most interesting features of this system is the fact that the hogs are kept until they are 16 months old and reach the large size just mentioned. The reasons for this are as follows:

The clover furnishes most feed the first half of summer, and the double number of hogs on hand at this time makes it possible to utilize this growth to best advantage. Again, pigs handled as these are, if sold at 200 pounds, will have made a large proportion of their growth during winter on expensive grain feed, while by keeping them till midsummer a larger proportion of the gain is made from clover, which is cheaper than grain. These points have received careful consideration by Mr. Rowe, and he believes he makes more profit by producing these large hogs under his system than he could make from the same area of land by selling the hogs earlier. He is undoubtedly correct in this. However, this would not be true for sections where good winter pasture can be made available. In this case it would doubtless pay better to secure two litters of pigs a year and sell them at not much over 200 pounds weight.

When the large hogs go to market the sows and pigs are given the run of the whole 20 acres. A little later, when the oats have been removed from the field, the pigs are also allowed access to the new seeding of clover if this is rendered desirable by the condition of the older clover field.

The temporary fence between the 12 and 8-acre divisions of the clover field consists of ordinary hog wire fastened to driven posts. These posts may be set at any time during the fall or winter when the ground is in proper condition.

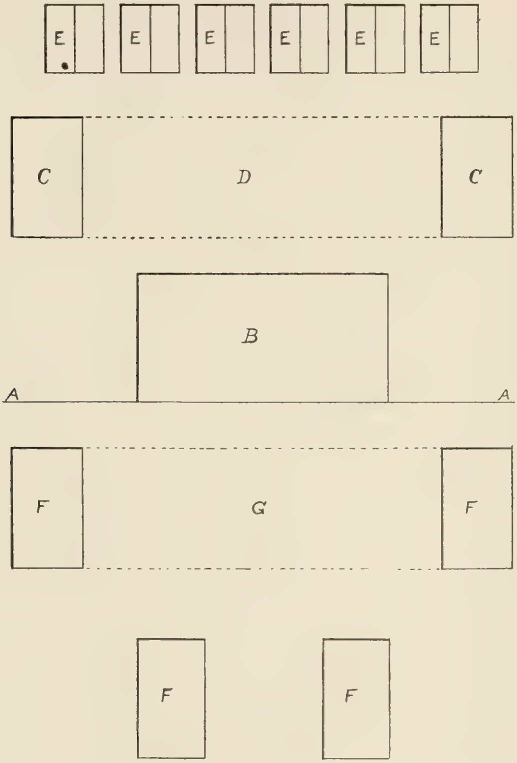

FIG. 1—Arrangement of shelter houses in the field. A A is the partition fence that separates the yearling hogs from the sows and pigs. B is the special pen in which the small pigs get their grain. C, C are two shelter houses, 8 by 14 feet; they stand facing each other, about 70 feet apart. D is a temporary shed, covered with straw, which furnishes ample shade in hot weather. E, E, E, E, E, E are small A-shaped houses, each large enough for sleeping quarters for a sow and her litter. Most of the sows sleep in the shelters C, C, or under the open shed D. F, F are shelter houses, 8 by 14 feet, like C, C, for the yearling hogs. G is shed similar to D.

SHELTERS.

The arrangement of the shelters during summer, when the hogs are on clover sod, is shown in figure 1.

During summer the grain is fed mostly in the vicinity of the shelters. If the feeding ground becomes muddy, the grain is distributed in a new place. In winter a good deal of mill stuff is fed, as previously stated (6 1-3 tons last winter). For this purpose troughs are placed on the wooden floor in the small feed lot at the center of the farm. The construction of these troughs (fig. 2) shows how carefully Mr. Rowe and his son, who has been an instructor in one of the short courses of the agricultural department of the University of Illinois, have worked out their problems. Troughs enough are provided so that for 100-pound pigs each pig has 18 inches standing room at the side of the trough. As the pigs increase in weight this allowance of space increases to 24 inches for 200-pound hogs. The center board (fig. 2, b) prevents the hogs from getting their feet into the troughs, but does not interfere with their eating. It also prevents fighting across the trough.

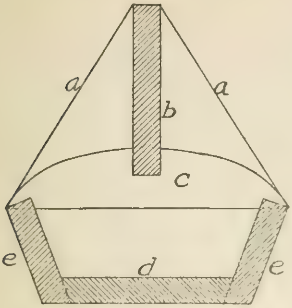

FIG. 2.—Cross section of hog trough for winter feeding. *a*, *a* are guy wires, which hold the 2 by 12 inch board (*b*) in in place. There are three of these wires on a 16-foot trough. The crosspiece (*c*) is made from 2 by 4 inch stuff, as a support for *b*. There are five of these to each trough. The bottom of the feed box *d* is made from 2 by 12 inch material and the sides *e*, *e* from 2 by 8 inch planks.

When the pigs are placed in their winter quarters (on about 4 acres of clover sod), the shelter houses are moved thither. Corn stover is used for bedding.

The larger shelters are 8 by 14 feet, 7 feet high in front and 4 feet in the rear. They are built on skids made of 2 by 8 inch stuff that act as sled runners and permit the buildings to be drawn from one location to another. The skids are so attached that when they decay new ones can be put in place. The corners are braced inside to prevent racking when the buildings are moved. There are no floors, but there is a cross sill at the center which practically makes two sleeping compartments. The front is open below, with two swinging doors above that can be pushed inward and fastened to the roof in good weather, thus letting in the sunshine. In winter the houses face to the south. The walls are battened inside. To prevent the wind from overturning these shelters each building is anchored to a post driven close beside it. These structures cost about $20 each.

The small A-houses are 6½ by 8 feet in size and 4½ feet high. They rest on a frame of 6-inch boards, to which they are securely fastened. These boards are the only parts of the structures that are in contact with the ground, and can easily be replaced when they decay. One end of the shelter is left open. The cost of these small shelters is about $7 each.

WATERING DEVICE.

The device used for watering the hogs is exceptionally well adapted to the purpose in the absence of a natural water supply. In fact, it is perhaps more desirable than ponds or even running streams on the score of cleanliness and decreased liability to infectious diseases. A sled large enough to hold an ordinary barrel is covered with a heavy water-tight floor boarded up water-tight 4 inches around the edges. The barrel is provided with a large bung or wooden stopper in the upper head in order that it may readily be filled with water. A half-inch hole is bored in the side of the barrel about 3 inches from the bottom (i. e., the opening is 3 inches from the floor on which the barrel stands). The lower hole being stopped, the barrel is filled with water. The large bung is then inserted air-tight. The sled is now drawn to the field, near the shelter houses, and the small stopper is removed. The water runs out, filling the shallow box forming the top of the sled to the level of the small opening in the barrel. The hogs may drink at any corner of the box. As the water is consumed more runs out. Two such barrels are placed in each inclosure, and filled once or twice a day or as often as they become empty.

New barrels are frequently not air-tight. To remedy this defect, when the openings which admit the air are not plainly visible the barrels are given a good coat of paint. This usually stops all small crevices. If a single coat of paint does not accomplish the desired result another is added, and so on till the barrel holds water and excludes air.

SOY BEANS.

The practice which led to the introduction of soy beans into the cropping system is of interest. The hogs in winter are penned on about 4 acres of the clover sod. During the winter the soil of this pen, or lot, becomes more or less puddled and is rather difficult to bring into condition for a good seed bed in spring. This can be accomplished, however, by continued stirring and clod crushing. But this takes time, and necessitates late planting. Here was a need for a crop that could be planted in late spring or early summer and yet fit into the general farm scheme. Several crops were tried, and a variety of soy bean known as the "Yellow Dwarf" was selected as most suitable for the purpose. In a letter to the writer concerning this crop Mr. Rowe says: "We have sometimes fed down our soy beans, but now we cut them to feed in winter and have them cover a long period. We grow the Yellow Dwarf, but are making some experiments with other varieties, and may change when we think we have something better. We plant in June; the first week in June is an excellent time, but there may be good reason for deferring it if the land is not in good order or is weedy. On weedy land it is best to destroy as many crops of weeds as possible before planting. We planted this year the last week in June, and the beans have matured nicely." The reader should not infer that this farm is weedy. Mr. Rowe has such an abhorrence of weeds that an acre of land having on it a dozen weeds would be considered weedy. The writer did not see a weed in the 4 acres of soy beans the latter part of July this year.

The soy beans are drilled in rows 20 inches apart, the amount of seed used per acre being one-third to one-half bushel. They are given the best of cultivation.

CORN.

The average yield of corn on this farm for the past four years has been 80 2-5 bushels per acre. The manner of preparing corn land and the subsequent cultivation accounts in part for this very satisfactory yield. Mr. Rowe's cornfields in July of this year were the cleanest the writer has ever seen. In preparing the land for corn sometimes one and sometimes the other of the two methods described below is followed, depending on the condition of the soil:

First Method.—Disk, lapping one-half; harrow; disk and harrow again in the same manner; repeat if there is time to do so.

Second Method.—Disk, lapping one-half; break with ordinary turning plow, then harrow twice before planting.

Cultivation.—The following is as outline of the subsequent tillage; harrow after planting, before the corn is up. After the corn is up, go over the land with a rotary hoe; then cultivate twice with rear shovels next the row and once with front shovels next the row. After this, cultivate between the rows with a one-horse cultivator at intervals of about two weeks till the first week in August. The cultivation should be shallow, so as not to disturb the roots of the corn. If any weeds survive this treatment they are removed with a hand hoe.

Breeding Seed Corn.—The most careful methods of breeding seed corn are practiced. In the breeding plat every alternate row is detasseled to insure cross-pollination. This insures seed of high vitality on the detassled stalks. Each year the choicest plants are selected for planting the breeding plat the next year.

FEEDING VALUE OF EACH CROP.

Mr. Rowe believes that when fed without waste a bushel of corn will produce 10 pounds of increase in live weight in hogs; an acre of clover, 400 pounds; and an acre of soy beans, 600 pounds. This agrees fairly well with the best estimates that can be made from the data given above as to the amount of grain fed, as may be seen from what follows:

Grain and mill feed used annually:	Pounds.
15 litters, 6½ months during summer (estimated 7 pounds a day per litter)	20,790
120 pigs, 5½ months during winter, at 5 pounds per day	100,200
120 yearlings, 120 days during summer, at 3½ pounds per day	50,000
Total grain and mill feed	170,990
Estimated production of pork:	
170,990 pounds of corn equals 3,050 bushels, which, as 10 pounds of pork per bushel, would produce	30,530
18½ acres of clover,* at 400 pounds of pork per acre, would produce	7,400
4 acres of soy beans, at 600 pounds of pork per acre	2,400
Total estimated production of pork	40,330
Actual results in pork:	
120 hogs, averaging 337 pounds	40,440
Difference in favor of actual results	110

The actual results are seen to differ only one-fourth of 1 per cent from the estimated total product. This shows that Mr. Rowe's estimates of the feeding value of these crops is very accurate.

PROPOSED CHANGE IN CROPPING SYSTEM.

It has already been stated that oats are not a satisfactory crop on this farm. In a recent letter the owner says: "We think now we shall change our rotation and have one division in alfalfa, running a rotation of corn, corn, clover on three fields; or we may use soy beans and omit the clover." If alfalfa proves to be a satisfactory crop on this land, the clover can de dispensed with, as alfalfa is a better hog pasture than clover. Mr. Rowe's plan is to leave the alfalfa down as long as it thrives, then set a new field in this crop and plow up the old one. The alfalfa will thus rotate slowly around the farm without interfering with the three-year rotation.

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*From the 20 acres of clover 1½ is deducted for the 15 sows which made no gain.

SUBSTITUTES USED WHEN CLOVER FAILS.

The clover fails to catch about once in five years on the average. It failed completely in 1901 and partially this year (1906). In 1901 it was replaced by rye sown in the fall, oats and rape sown in early spring, and soy beans sown in late spring. This year a light seeding of oats and rape was added to the clover sod. When the pastures are short the deficiency is made up by feeding more grain.

LABOR.

One man is hired by the year and another from spring until late fall, about nine months in all. When the temporary employee is a good hand, employment is found elsewhere for him for the winter months, so that he may be available the next year. Mr. Charles Rowe, the son of the proprietor, when at home, takes an active part in the work of the farm. This labor is not at all confined to the home farm, however, as Mr. Rowe owns three other farms. He estimates that the labor used on the home farm, in addition to that done by himself and son, amounts to about one and a half men for the year. The wages paid are $22 a month and board.

The work stock consists of one team of mules, one team of horses and one driving horse.

FINANCIAL RESULTS.

During the past ten years the owner of this farm has been able to buy another similar farm of 96 acres a few miles away, paying over $100 an acre for it. Exactly the same system has been instituted on the new farm with highly satisfactory results. This second farm is in charge of an intelligent hired man, who gets good wages and a small percentage of the profits. The owner and his son superintend both farms very closely and the son does much of the work on the home farm. The father does his share also, but not so large a proportion of the work as he formerly did. He also owns another farm some miles away, too far to be managed directly by the owner. During the present summer an 80-acre farm near by has been added to his holdings. Eight acres of this are to be put down in permanent pasture and the remaining 72 acres divided into four equal fields, to be managed exactly like the home farm.

Last year 450 bushels of pedigreed seed corn were sold from the home farm and a like amount from one of the other farms. On a neighboring farm under Mr. Rowe's direction 200 bushels more were grown. The average price received was $1.82 per bushel. As already stated, about 120 head of hogs are sold annually from the home farm. A like number is sold from the other farm. The average annual result from the home farm are shown in the following table:

120 hogs, at 337 pounds weight ... pounds	40,440	
40,440 pounds, at 6 cents*	$2,426	
450 bushels of seed corn, at $1.82	819	
Gross income		$3,245
646 bushels corn, bought at 40 cents	$ 258	
6⅓ tons mill feed, bought at $20	127	
Wages and board of of 1½ men	576	
Total outlay		$ 961
Available for general expenses, family income, etc.		$ 2,284

From this net income should be deducted an amount sufficient to cover insurance on buildings and loss from deterioration of buildings and other improvements, farm machinery, work horses, etc. The remainder represents (1) interest on the investment, (2) wages for the labor of Mr. Rowe and members of his family, and (3) clear profit.

It is evident that quite a large part of Mr. Rowe's success is due to the production of high-bred seed corn and the sale of the same at more than four times the price of ordinary marketable corn. This is the result of Mr. Rowe's intelligence, enterprise and business ability. His success in this line can be duplicated by many other farmers either in the production of high-bred seed of some farm crop or in some other special line of production. However, it may be instructive to eliminate the production and sale of seed corn and see what would be his success if he restricted his efforts to hog farming.

Since Mr. Rowe is a man who understands fully the possibilities of his farm, it is fair to assume that if he depended entirely on hogs for his income he would keep as many hogs as his system of farming would permit. At present the number of hogs kept is limited by the area of clover pasture. Now, by adopting two two-year rotations of corn and clover, sowing clover in the corn at the last cultivation—a practice which is entirely feasible—he could double his area of clover pasture, thus doubling the number of hogs kept. Presumably, he would also insert 4 acres of soy beans in the other cornfield in order to have hay for winter feed. He would thus have 32 acres for corn on which he would produce 2,560 bushels. As he would need 6,152 bushels for feeding his hogs, it would be necessary for him to buy 3,592 bushels. Figuring the financial results on this basis we have the following:

Hogs, 240, averaging 337 pounds, or 80,880 pounds, live weight, at 6 cents per pound		$ 4,852.00
Corn bought, 3,592 bushels, at 40 cents	$1,436.80	
Mill feed bought, 12 2-3 tons, at $20	254.00	
Wages and board of two hands	768.00	
Total outlay		2,458.80
Net income		$ 2,393.20

It is here seen that the net profit would be slightly larger than under the system actually in vogue. In discussing this point with the owner of the farm, it developed that the reason why the system just outlined is not followed is the ever-present danger from hog cholera. Because of occasional losses from this disease the system which includes the production of seed corn would, Mr. Rowe believes, in the long run prove to be more profitable than the one in which hogs represent the sole source of income.

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*The price received this year was over 6 cents a pound live weight. With hogs at 5 cents a pound the net income would be $1,767.

CONCLUSION.

There is much satisfaction in contemplating the methods and results on this farm. The influence of the agricultural college is distinctly seen. Sound judgment and good management are apparent. Presumably, every farm in the United States, barring differences in soils, could be made as profitable if all our farmers knew how to farm as well and had the necessary executive ability. The object of this and other similar articles is to aid in giving others a knowledge of the essential details of management required for such success. Unfortunately executive ability can not so easily be acquired; yet there are thousands of farmers who are today running unprofitable farms who lack only the knowledge of how to farm in order to succeed as this farmer has.

The one ever-present element of danger in hog raising is the liability of loss from cholera. The farm described has met such losses. During the present year only 90 hogs were sold from each of the farms because the numbers had recently been depleted by cholera. This disease is probably carried from farm to farm by farmers themselves as often as in any other manner. In a field or lot of sick hogs the soil becomes infested with the germs. These are carried on men's shoes, on wagon tires and in other similar ways from one farm to another. Strict quarantine will frequently carry a herd of hogs safely through an epidemic of cholera, but there is at present no satisfactory way of avoiding this disease. The farmer who depends largely on hogs for his income must therefore be prepared to meet occasional losses from this cause.

FEEDING HOGS FOR PROFIT.

Fred Watson, Spencer, Iowa, Before Clay County Farmers' Institute.

We must bear in mind the old adage, "There is no excellence without great labor," and paying attention to the little details in hog raising, as in every other work in life, constitutes the difference between successful and unsuccessful hog raising.

If we would feed hogs for profit we must have a profitable type of hogs with which to begin. Taking it for granted then that we have got the foundation stock of hogs or brood sows, having chosen the breed of hogs that comes nearest to suiting our fancy, we must then procure a male animal that is equally as good in the standard of excellence. If possible select one that is good in points in which your brood sows are deficient. Get one as gentle in disposition as possible.

The male hog should have good breed characteristics, should have good back, good feet, standing pretty well upon toes, good heart girth, indicating constitution and quality. Moreover he should be long and deep in body, even in width and smooth in the side. The length of body must be obtained in the proper place, namely, from the rear of the shoulder to the back end of the hog, with as much length as possible from the back end of the rump to the front end of the loin. The shoulder should not be overly thick nor the neck or snout be too long, but it goes without saying that the ham cannot be too good.

The young sows that you wish to use as brood sows should be separated from the hogs you wish to fatten for the market. At least by the first of November, and fed less corn and more oats, thus acquiring more muscle and larger bone. It is very necessary that the sows have plenty of exercise during the winter months. If they are prevented from getting too fat they will be more liable to exercise themselves.

The best time perhaps to have the sows farrow is from the middle of April to the first of May, but if you see that you will not have feed enough to keep your pigs in a good thriving condition until you raise some more feed it is better to have your sows come in later than this, for a well fed June pig will make a much more profitable pig than a starved April pig, and he will be ready for the market just as soon and the chances are a little sooner than the starved April pig. Now as farrowing time draws near we should prepare to give the little baby piggies a warm, dry and comfortable reception by having suitable dry and sunshiny quarters for them. If you have difficulty in getting the sow into this place you have prepared for her procure a bushel basket and place it over her head. By so doing she will begin to back up, or perhaps whirl around a few times. Now remove the basket and the chances are she will go in the direction you wish her to go. If not repeat the operation, but by all means be gentle with her. Do not get her excited, for you cannot be too careful with her at this time. There should be no noise in the farrowing quarters, as the sows at this time are exceedingly nervous. If the weather is very cold do not leave the pen long at a time. The little pigs should be picked up and placed in a bushel basket with some dry chaffy straw in the bottom, carried to warm quarters for an hour or so and then returned to their mother. Fortunate is the swine raiser if his sows farrow at or near the same time, as this lessenes the chance of his having many runts to contend with during the season. When the little fellows are about four weeks old they will be large enough to eat a little and they will eat shelled corn as soon or sooner than any grain you can give them. There should be a small pen made for them to prevent the sows getting their feed. If you have skim milk this is an excellent feed for either pigs or sows, and I doubt if there is any better. But they should be taught to eat oats while they are young, lest they refuse to eat them when the cows go dry and the milk supply low. Good oats constitute the best substitute for milk.

The dam should be fed oats once a day while she is nursing the pigs, but if you have plenty of skim milk she will raise her pigs very nicely on that, and corn. The sow should be fed about the same kind of feed a week or ten days before she farrows that you expect to feed her after she farrows, thus avoiding sudden changes of feed, as this is fatal to little pigs. I have found it advisable not to give the sow anything to drink for at least twenty-four hours after farrowing. At that time she may be given a little lukewarm water, or better still, a little warm milk; 36 hours after she may be given a very light feed of oats or mill feed, but be sure to increase the feed gradually to avoid trouble. We should never feed sour milk or any sour feed until the pigs are eight or nine weeks old and even then given gradually. Care must be taken to give the sows and pigs plenty of exercise; if not the pigs are liable to get the thumps and die. Do not overfeed the sows while the pigs are small, as the result, you are aware, is to dry up the sow, and then you will begin to wonder what is making the little pigs squeal, when the chances are the little fellows are not getting enough to eat. The pigs may be weaned at 10 weeks old or even sooner if a second crop is desired. It is exceedingly difficult to raise fall pigs unless you can have September or early October pigs for the reason that they do not get strong enough to withstand the cold weather. Get the sows and pigs on grass as soon as possible. Clover pasture, in my experience, has proven best. By all means keep the pig growing.

Pigs are very fond of pumpkins and I believe they are good for them. They seem to take the place of oats. Those fed with corn in the fall, when you are getting them on to full feed, produce excellent results. Pigs and hogs require salt once a week, and when you are crowding them very hard they will bear salting twice a week. Perhaps the best way to give them the salt is by mixing the salt with wood ashes, but if you have not wood ashes they can be salted by scattering the salt in a discarded pig trough and then by putting a few oats over the top of it. They will not get more salt than is good for them. The salt aids digestion and at the same time causes them to drink more slop. Now I think the best time to feed fattening hogs their regular feed of oats is before you feed them their corn in the morning. This seems to put a saliva in the hog's mouth and aids very materially in digesting the feed of corn that is to follow a little later.

We should be regular in the time of feeding and also never feed more than they will eat up clean. I believe a hog to be the most profitable should be ready for market at 8 months old and he should weigh from 225 to 250 pounds at that age.

THE RED HOG.

George D. Black, in Breeders' Gazette.

The rise and progress of the Duroc-Jersey is a rather striking phenomenon in the realm of animal industry. Not very many years ago it was so uncommon at the fairs as to be an object of curiosity. The claim made for it then was that it was remarkably prolific and hardy, but the types varied and were not very prepossessing at best. The specimens that I saw ten years ago were coarse in form and hair, and presented a poor picture compared with the Poland-China at that time. As one looked at them there seemed little likelihood that here was a hog that in ten years would be widely spread over the United States, would bring the highest prices for fancy specimens and be ahead of several other long-time favorites.

Yet the red hog is not a recent production in this country. It reaches back at least to 1823. At that time there were a few red hogs in New York, called, so the legend goes, Duroc, from a famous stallion in the state by that name. Just why they were so called does not appear in the tradition any further than that the owner of the stallion had some of these hogs. About this time, or a few years thereafter, there were red hogs in New Jersey, evidently of Spanish origin. They were of enormous size, weights of mature specimens ranging high. The New York hogs were finer in bone, easier to fatten, but not so large. Evidently further along these two strains were blended and the result has come down to us in the Duroc-Jersey as we have it today.

But the red hog of today is a vastly improved animal compared with its ancestors. While retaining in a large measure the constitutional virility and thriftiness of the early eastern hogs, it has been grown more and more to a certain type, till today there is no hog in America, perhaps, more definitely established in breed qualities. It is true that sometimes you come across red hogs that are like the olden type that used to be on exhibition, coarse, slow to mature, hard feeders; but they are never seen in herds of careful breeders. The well bred Duroc-Jerseys of today is an excellent grower, easily fattened at any age and as attractive as any other hog that goes into the show room.

Without in any way minimizing the good qualities of other breeds there are certain things which may be confidently claimed for the Duroc-Jersey. One of these is prolificacy. I think it is generally conceded that in this respect this breed has no superior and few equals. It is seldom that a Duroc-Jersey breeder has any cause to complain that his litters are too small. My own experience has been that the litters are generally too large to be raised, and with only one occasional exception the number raised is all that could be desired. The Duroc dam is a good mother, a good milker as we say of cows, and for this reason she is able to take care of a large number. This prolificacy is owing to the wonderful constitutional vigor of the red hog, and as long as it is maintained the power of reproduction will continue.

Another quality that is marked in this breed is docility. This is the general verdict of red hog breeders. The Duroc-Jersey is naturally quiet and gentle and easily handled. Nearly all in my own herd can be petted just as one pets a dog. This is a point of immense value in farrowing sows, as every one of experience knows full well. I am sure it saves us a large number of pigs every year. Moreover, the feeder learns that the quiet, docile hogs gain faster than the wild, nervous ones. But who wants any animals around him that are resolutely determined to reject all overtures of kindness and are averse to the friendly touch? Half the pleasure one gets out of the little world of animals around him on his farm is in the friendly relation which he sustains with them in the world of animal life. A real stockman lives in a good fellowship with his animals, like the Scotchman with his cattle and the Frenchman or Arab with his horse. Whenever you see a farmer whose sole interest in his stock is in the money he can make out of it he is sure to be a poor stockman. He has no sympathy with their sufferings and no pity for their foibles. The man who said that the more he saw of men the better he liked dogs did not say a smart thing; in fact, he said a very silly thing; but the man who is much with chickens and sheep and hogs and horses and does not have a growing interest in them, does not find the study of them increasingly attractive, is unfortunately lacking in one of the prime qualities of a husbandman, or, what is of more importance, in one of the prime qualities of human sympathy. The more one sees of men the more he ought to like animals, but not because he likes men less. The more he sees of animals the more he ought to be in sympathy with all life, most of all human life.

If one is in the Duroc-Jersey business—that is, the pure-bred business—he must give some attention to the fancy points of the hog. That is, he must get and keep the approved type as nearly as possible, and this means a certain amount of care in regard to the things that constitute elegance in the Duroc-Jersey. And yet I am moved to say that that statement needs to be taken with considerable caution, in view of the fact that there is a manifest tendency often to sacrifice utility points to fancy qualities. This is seen in several lines of breeding—in poultry, in cattle and in hogs. For instance, I read the other day an article from a noted breeder of Barred Plymouth Rocks, in which he compared the finest specimens of that breed today with the best of ten years ago, and he went on to say that a marvelous progress has been made in that time in this great American fowl, that in the next ten years a like development may be expected, and that indeed there is no limit to be set to what might be done. But he is in error. There is a law which the economist calls the law of diminishing returns that puts its decree of limitation upon what can be done. For instance, it is good to exercise, it promotes strength and health and long life, but one can exercise till he passes the pivotal point and then it becomes a menace to health and life. Eating gives strength to a certain point, but carried beyond that it induces disease and death. People wonder often whether there is any limit to the speed at which a train of cars may be run. It can reach the point at which the expenditure of force and the risks are too great to be profitable.

This law is in force in breeding. There are limits to fine breeding. You can push the demand for fancy points, for certain elegant qualities, till you pass the point of progress when the animal suffers a loss in stamina and a consequent loss in the power of reproduction.

The show room and the sale room and the ambition to produce something just a little more elegant than anybody else are things that threaten the virility of the red hog, as they have already worked harm in other breeds. The Duroc-Jersey can be made to reach the overripe stage when elegant specimens will vex their owners with litters of from three to five pigs.

The red hog first of all must have a good back and loin, good legs and feet. These are the foundation, and no number of merely pretty points can make amends there. The Duroc-Jersey should carry its size throughout from head to tail, should stand up well on its feet; its back should be arched enough to indicate strength, and there should be every indication of constitutional vigor. Another thing that needs careful watching is length. I find some breeders forgetting that the red hog is one of generous length. Little dumpy brood sows are never satisfactory, and they are out of place in this breed. I should avoid the other extreme of breeding for length until I had a herd of hard feeders on my hands. I should maintain as much length as I could do with quick response to generous feeding.

After these elemental things have been settled the breeder may turn his attention to color, eye, ear and tail; and in what I say about fancy points let it be remembered that I assume that these primary things are kept first in importance.

It is difficult to describe a color. We can do it only by comparison, and then it is seldom accurate. The color which has proved to be the most satisfactory to the majority of red hog breeders is a rich glistening brilliant red. The standard calls for a "cherry red," but cherry red is a very dark red, darker indeed than the generally approved Duroc-Jersey color. Sometimes one hears it said, under a misapprehension, that the approved, standard color is cherry. Now there is a difference between cherry and cherry red. Cherry is a light red and cherry red is a dark red. Neither one is the ideal Duroc-Jersey color. It is rather between the two, but whatever the distinctions, it is to be borne in mind that the color is not yellow, nor buff, nor straw, nor brown, but red. The Duroc-Jersey is a red hog. In a color like red, which is bound to vary even with the most careful breeding, the tastes of breeders diverge somewhat, but it will be found that the safest, soundest and most attractive color, and the one most in demand, is a medium rich red. The breeder that sticks to that color will always find himself on sure ground, and his stock will be in demand if it is meritorious in other respects.

The head of a fancy Duroc-Jersey is rather small, wide between the eyes, slightly dished (a little more than the Poland-China and less than the Berkshire), heavy jowl, large eyes and tapering nose. The ear is rather small, pointing outward from the head and drooping downward from about one-third the length of the ear from the point. It is true that this sort of an ear is a rather distinguishing mark of the breed and should be maintained when it can be done without sacrificing more important things. The head (including the ear) indicates the nervous quality of the hog and so is an index of its power of assimilation. The Duroc-Jersey with an ideal head is always an easy feeder.

Finally I want to say that the red hog breeders should keep in lively remembrance the fact that the final test of any breed of hogs is its market value. If it fails to be valuable to the men who grow the world's pork it is doomed, no matter how elegant and fine it may be. Hobbies in breeding are things to fight shy of. The show room and the sale room have their dangers. Daintiness, smoothness, beauty can be had sometimes at too great a cost of virility. The Duroc-Jersey is a wonderfully virile, prolific, useful hog, but it may be injured by its friends. Never sacrifice the elemental things to the mere fancy, though fancy points are all right if the foundation on which they are built is sound.

HOW TO RAISE HOGS SUCCESSFULLY.

John F. Myerly, Deep River, Iowa, before Poweshiek County Institute.

The necessity of housing swine by artificial methods comes principally from two causes: First, the natural protection furnished by the forest has generally been removed; and, second, the hog is becoming more of a creature of civilization, which is taking from him the necessity of rustling for his feed, which is likewise lessening his aiblity to withstand an excess of rain, snow, cold and even sunshine. It is a fact that hogs which are not housed in some manner will not only make small growth at high cost, but also are much more liable to diseases of all kinds.

By housing I do not mean confinement, as exercise is always needed. The two common forms of housing, which in slightly modified ways fit nearly all conditions, are the large stationary house and the portable house.

In the large stationary house we get the most floor space under cover at the least cost. A permanent building is generally built near other stock buildings, thus bringing the feeding work all together. This building can be so arranged with loft that all kinds of feed and bedding can be conveniently located where needed. But the fact that the building is stationary calls for a lot or yard in which the grass is soon killed. It generally becomes rooted up and filled with hog wallows. A permanent building calls for a strong structure and the use of much lumber, which makes it difficult to disinfect thoroughly. It is almost impossible to make one house, no matter how large, to accommodate hogs of all ages. The most needed use for a well-built hog house comes at farrowing time. Now, if the structure be a large one with stalls for each sow, the first one which farrows may do all right, but if another follows soon this second sow is generally disturbed by the squeals and noises arising from the pen where the other pigs are. To me this fact is one of the greatest drawbacks to the stationary house. How often we have heard men say: "That sow got restless and killed all her pigs," when the cause for it was a squeal from a pig in another pen near by.

MAKING PORK QUICKLY.

When my pigs are three weeks old I place a shallow trough near that of the mother, put a little shipstuff and skim milk in it, give them a little soaked corn near by and in a short time they will learn to come and eat by themselves. At eight weeks old they will be able to feed themselves and in this way will receive no check at weaning. From this time on the pigs should be pushed as rapidly as possible, for the sooner they will weigh 250 pounds the more profit there is in them. Hog raising is seldom profitable unless you have plenty of good pasture.

I do not feed them all the corn they will eat while on clover, for if they eat too much they will not eat enough clover. Of course, clover will not last all season, but by the time the clover is gone they will be big fellows and ready for a full feed of corn, which is the cheapest feed for us to finish them with.

No matter what the subsequent use of the pig on the farm is to be, his early development should be carefully guarded. As compared with other farm animals, the pig is obliged to sustain a heavy weight on his feet and legs. This suggests the advisability of giving considerable thought to the proper development of bone and muscle. Milk is the natural food for the young pig, and that of the mother should, as the pigs grow older, be supplemented with skim milk from the dairy. In case this is not available, a good substitute will be found in fine wheat middlings. Not only is it advisable to feed the young pig skim milk, or some other feed well calculated to make bone and muscle, because of the necessity of having strong feet and legs, but because the flesh of the pig is perhaps as much or more susceptible to influence from feed than that of any other farm animal. That is, feed the young and growing pig a nitrogenous ration like an abundance of skim milk or middlings and a superior flesh is produced.

THE DIPPING OF SHEEP.

By W. J. Kennedy, Ames, Iowa, in Iowa State Register and Farmer.

The strongest argument for the dipping of sheep lies in the fact that it is the best way of freeing them from external parasites. This is so generally accepted that it is only necessary to mention it. Sheep are very frequently troubled with red lice which can hardly be seen, and yet they cause the sheep unlimited annoyance. Dipping will completely destroy these. Ticks cause the farm flocks of this country untold annoyance, and for these dipping is thoroughly effective. Ticks and red lice do more damage than we are aware of, because the evidences of the annoyance that they give the sheep are not so marked as in some other troubles, but they are none the less a severe check to their well-doing. Dipping, followed faithfully each year, will completely remove the baneful results from the presence of these parasites. For the eradication of scab, thorough dipping stands first among remedial measures.

While the destruction of these pests is usually the mainly accepted argument for dipping, yet there are others that, grouped together, make a more favorable indorsement for the operation. Among these may be briefly mentioned cleansing the skin, cleaning the wool, and, particularly, encouraging the best growth of the latter. To get the fullest returns in these directions, the dipping should be done twice each year—in the spring shortly after shearing, and again in the fall just before the advent of winter.

Shortly after shearing it is an advantage to dip the flock thoroughly so as to cleanse the skin. This not only adds to the thrift of the sheep and the lambs, but in all instances it favors the growth of wool and secretion of yolk. Not only is the growth of wool better from it, but it adds indirectly to the function of the fleece as a protection to the sheep. The fleece of a sheep that has been dipped is more likely to remain intact throughout the season, as there is no cause for the sheep rubbing or otherwise breaking the compactness of it. Another advantage to the fleece that seems to follow dipping at this time is that it seems to lessen the tendency for the sheep to lose their wool in spots too early in the season. When the fleece is clean and healthy it seems to continue growing longer and the wool does not peel in patches.

Dipping in the fall is more for the purpose of removing from the fleece such foreign matter as may have been gathered during the summer, and also freeing it from any of the parasites that prove such an annoyance during the winter season. Even under the best conditions the fleece is likely to become filled with sand and other foreign matter, which during the winter would produce such irritation as causes the sheep to rub against sharp surfaces and destroy the compactness of the fleece. By dipping them late in the fall, when the ground is frozen, and then keeping them away from the straw stacks, feeding them in racks that prevent the chaff from falling into the wool, it is possible to put a clip on the market in the spring just as clean as if the sheep had been washed previous to being shorn.

It is hard to measure the damage that is done to the fleece alone, to say nothing of the thrift of the sheep, by overlooking dipping in the fall. It is quite common to see sheep in the ordinary markets of the counrty with fleece badly broken by tearing at them, rubbing under wagons, or through some such means, through the endeavors to get rid of the irritation of the dirt that was left in the fleece. Such fleeces are likely to become cotted, especially if the sheep have not been dipped in the spring so as to encourage the secretion of yolk. A fibre of wool is covered with scales that overlap each other similarly to the shingles on a roof. To keep these scales down and to prevent them from warping just as shingles would do, there must be a liberal supply of yolk in the fleece. If this yolk is not secreted, owing to the unthrifty condition of the skin, the scales rise and the fibres become matted, and finally so bad as to be known as cotted. Fleeces of this kind sell for three or four cents per pound less than they otherwise would on the general market. The fleece of a sheep that has not been dipped—one that is dirty or discolored—also sells three or four cents per pound less in the Chicago market than the fleece of a sheep that has been cleaned by dipping. These are facts that may be verified every spring in the Chicago market. This difference, applied to a fleece, would pay for the dipping of more than a dozen sheep.

While the foregoing applies especially to breeding flocks, there are just as forcible reasons for dipping feeders. In feeding sheep it is of prime importance to have them reach as rapidly as possible that sappy and thrifty condition which is conducive to good gains. Dipping will hasten this, and it also removes the risk of unlimited losses through an outbreak of scab. It is good policy to take it for granted that the feeders are in need of dipping, rather than wait for the evidences of it, which usually come when the sheep should go to market.

THE UNIVERSAL SHEEP—A SCHEDULE OF ITS REQUISITES AND MANY ADVANTAGES.

Howard A. Chandler.

Every farmer or breeder has his own ideas about the sort of live stock he admires. All who are acquainted with the sheep industry have pictured in their minds an ideal sheep. Through exhibiting at the fairs and meeting all sorts of buyers both there and at our farm, we find that the general trend of ideas is toward much the same sheep. In speaking of "The Universal Sheep" we do not mean the sheep that is raised everywhere, but rather the sort of sheep that would be bred if all breeders could nearly approach their desires. Such a sheep, we think, would be of rather exceptional size, with a straight back and wide hind end, heavy bone and a dense fleece of good length. That would be very close to it. Experience is the teacher that gives most farmers their lessons, and it is a good teacher, too.

Size is to be desired for several reasons. On most farms the flock is let have the run pretty well all over and in the autumn or winter the lambs are sold. Sheep which will mature to a greater weight during that length of time are the ones which the farmer will want to produce. There is plenty of grass, weeds, etc., and even though the larger sheep does consume more feed, he is the right one. For "The Universal Sheep" perhaps there are more farmers who would choose the rather too large sheep than there are farmers who would choose the sheep with undersize. A good big sheep is all right and we all admire him, but there is a limit and other things must be considered. The straight back is desirable, but there are other things about it to consider. We do not want an arched back like in the hog. This will bring back the subject of size. When we find the exceptionally large sheep, as a rule, they are coarse. The back may be straight, but it is bare, even though the sheep is fat. The large sheep has bareness throughout. What is wanted in the packing house are the lambs with large amounts of natural flesh; well covered with lean meat all over. Get this desirable covering of flesh and then what size you may wish for.

HOW TO EXAMINE SHEEP.

The way to determine the amount of flesh upon the back, loin, etc., is to take the hand flat and commence on top of the shoulder. Pass downward and ascertain the covering on the shoulder. Bring the hand along the back and besides learning the flesh covering you will know of the straightness. After passing the loin take both hands and find the width of loin and also ascertain the depth. Also notice how well the general width is carried back to the tail-head. Passing on down to the hind quarters, with your hands learn the filling of meat there. Remember that the back and hind quarter make the highest priced cuts of mutton. Don't think that the buyers on the market will not pay more for the good ones than they will for the common sort. It is true that a few years ago sheep were sold in quite mixed bunches, but the sheep industry is on a different footing now and market receipts are sold exactly for what they are. Some lambs may go at $5 and others at $7.25 per cut the same day. This desirable mutton form can be bred in sheep of good size, but rarely in the monsters of each breed.

UTILITY OF STRONG BONE.

Although bone is not eaten, it seems desirable in the breeder's flock. For the real mutton sheep to dress out the highest per cent of meat, it is desirable to have the bone as light as possible. But the breeder must maintain bone of good size in the flock or sometime he will have a few sheep which would not be able to carry their weight when fattened. Of course, we must bar against the extremely heavy bone, because that would mean carelessness throughout. To have the wool dense and of good length is a prime requisite. Although the breeders in the corn belt must pay close attention to the mutton qualities in their flocks, a good fleece can also be added. The Merino need not be introduced for this purpose. By careful selection rams of the English mutton breeds can be obtained which have extremely heavy fleeces and very dense. There is a great variation in fleeces, and when making selection of your flock-header it is well not to be too easily satisfied. The fleece should be of good length and the fibre dense. Density means the number of fibres to the square inch. Of course, they cannot be counted, but you can easily ascertain the density by the hand with fingers close together. Take the hand full of wool on the side of the different sheep and you will find that there is lots more wool in your hand on some sheep than on others. Notice carefully the wool covering the belly. We must guard against bareness there for several reasons: Proper wool will increase the weight of fleece and also serve as protection from cold when the sheep is lying on wet ground, etc. A good, heavy fleece can be produced on mutton sheep of the highest type and we must still strive to have that sort. Not only does it increase your profits at home, but it increases the price of the lambs you send to market. In our large market centers sheep pelts are considered quite an item, and the lambs with heavy, dense fleeces will outsell the others.

RUGGED CONSTITUTION REQUIRED.

There is one very important thing which has not been mentioned and which is ofttimes never thought of or taken into consideration by the breeder or buyer. That is constitution. You cannot make an engine do its work without steam, and to produce the steam there must be a big boiler. A good sheep cannot be produced without the proper assimilation of large quantities of food and the correct action of the blood throughout the body. This cannot be done unless the sheep has a large, deep chest, giving plenty of room for the proper action of the heart and digestive organs. The sheep must have a strong constitution in order that it may give the best results either in the breeding pen or in the feed lot.

Weak sheep cannot produce good, strong lambs, neither can they give good returns in the feed lot. The healthy, strong constitutioned sheep has much different appearance and general make-up than the weak one. In examination of a sheep I always start at the end of the nose and work back. The indications of strong constitution are: A wide, well-opened nostril, a short, broad head, width and depth of chest, fullness behind the shoulder both on top and at the side, well-sprung ribs coming wide out from the backbone. Such a sheep has room for the vital organs to perform their work in a proper manner. Neither the breeder nor the feeder can afford to lose sight of constitution in his sheep, because his profits will be cut short from what they would have been just as much as the sheep lack in constitution from what they should be.

VALUE OF PEDIGREE.

After you have correct sheep selected for individuality, it is well to look to their breeding. The old saying that "blood will tell" is a very true one. Pedigree is a list of an animal's ancestors. A sheep with a "short pedigree" might be a good one, but his ancestors of rather inferior quality. The sheep with the "long pedigree" has noted ancestors for many generations. When placed in the breeding flock the characteristics of the ancestors are sure to be in evidence in a greater or less degree. Therefore, the lambs from the well-bred ram will be uniform and show the results of years of careful breeding. The lambs from the ram with the "short pedigree" will also copy after their ancestors and some will show that inferiority that was in those ancestors. Therefore, the lambs from this ram are more liable to be a "mixed lot" than those from the ram with better breeding. The same facts will come about year after year. It pays to be careful in the blood lines you introduce either into grade or pure-bred flocks. The mutton buyers on the market always pay a premium for the uniform lots.

Considering that the universal sheep of today is the big fellow with a dense fleece of good length, heavy bone, a straight back and wide, well-filled hind quarter, we wish to add that a great improvement for the industry will have been accomplished when we add to these qualities the all-important ones of constitution, covering over all parts with natural flesh of lean meat, and pedigree which will help us maintain the good qualities in a uniform manner throughout.

INFLUENCE OF THE RAM ON PROLIFICACY.

From the Ruralist.

The question of the relative influence of the ram and ewe on prolificacy has been much debated. The controversy has waxed fierce and warm, and what has been the outcome? It has lingered largely on the question, first, as to whether the male can create increased prolification in the female, as the outcome of a single mating; and, second, as to whether the male can transmit an increased tendency in the female progeny to the same because of inheritance. In the controversy some have claimed, and confidently, that the male exercises no influence on prolificacy. Others claim that the male does exercise an influence that is far-reaching. Some go to the length of saying that the influence thus exerted is as great as that exerted by the female, but a majority of those who hold to the view that males do exercise such an influence are ready to concede that this influence is less than that exerted by females.

In the present discussion the question will first be examined as to whether the male does influence prolificacy in procreation; and, second, what is the relative strength of the influence compared with that of the female. Of course, a negative conclusion as to the question first discussed would preclude the necessity for discussing that other question.

With quadruped females capable of producing more than one at a birth, and which produce one in some instances and two in others, the different results are the outcome of some influence exerted on procreation in the dam rather than the result of chance. It is evident that such influence comes entirely from the dam or entirely from the sire or partly from both, or it comes from one or more of the sources named, aided by external conditions such as food and environment. The ewe capable of bearing twins does not always produce twins. Why should there be such variation? The sow capable of producing twelve pigs at a birth, as shown by the fact of such production, in another instance will produce but six pigs at a birth. Why should that be?

That the female does exert an important influence on prolificacy is universally conceded. Some ewes produce only one lamb at a birth, while others produce two, though mated to the same ram for successive years. It may be asked, then, does not this prove that the ram does not influence prolificacy? I answer no. The most that it can prove is that the ram does not exercise as much influence on prolificacy as the dam. Such evidence is negative rather than positive, for the same ram mated with other ewes will in some instances result in but one at a birth and in other instances in twins, which at least makes it possible, in the absence of evidence to the contrary, that the ram does exert an influence on prolificacy.

It has been noticed that when but one ram is used in a flock the proportion of twins from the earlier births is greater than from those later. From this it has been argued that this result follows from the greater vigor possessed by the ram. But if vigor in the ram influences prolificacy then, by parity of reasoning it does in the ewe, hence it is conceivable the result stated may come partly or chiefly or even wholly from the ewe, as the more vigorous among the ewes come first into heat. But it is almost certain that some of the influence resulting in plural births comes from the ram, as, if the said ram, enfeebled by excess of service, was then turned in to mate with the ewes of another flock, equal in prolificacy and vigor to the former, it is almost certain that a less proportion of twins would be produced in the earlier births. It is also true that Poland-China sows enfeebled by injudicious management when mated with Poland-China boars similarly enfeebled will produce fewer at a birth than if mated with vigorous Tamworth sires. This at least is the result of limited observation. If it could be sustained by facts the result of well conducted experiments, it would settle the question, at least as to the fact that the male does exercise some influence in prolificacy, but it would not determine the degree of such influence. From the argument given above, therefore, it would be correct to say that it is extremely probable that the male does exercise an influence on prolificacy.

But the argument thus far has only recognized vigor as the source of such increased prolificacy. To this may be added judicious feeding. The ewe pastured on rape or roots for some time before mating will be more prolific than the ewe confined to dry prairie grasses. Likewise the sow habitually fed on a variety of succulent foods will be more prolific than the sow fed habitually on corn. It is taken for granted, then, that vigor and food do exercise an influence on prolificacy. No one well informed on these questions will deny this. And it is almost certain that these influences are so operative through the male as well as through the female.

Once grant that the male does exert such influence as the outcome of judicious feeding, and it is then not difficult to show that this influence on the part of the male will be strengthened or weakened, as the case may be, by inheritance. Some persons claim that the female influences only certain parts of the organization and that transmission in the male influences certain other parts. This I do not subscribe to. It has never been proved. Until it is proved, the conclusion is justifiable that the influence of both parents extends to every feature of the organization, including breeding tendencies, not necessarily in equal degrees nor always in the same degree. Now, if this is true, and I believe it true, then it follows that the power to transmit tendencies to prolificacy or the opposite inheres in both male and female as the result of inheritance. No one will doubt this in the case of the female, but many do doubt it in the case of the male. If it is true that the male does exert influence on every part of the organization, including capabilities in the line of performance as well as physical features, then it is true that the male, as the result of inheritance, does transmit tendencies to increased prolificacy, the influences that govern reproduction being so effected by the degree of this inheritance, but this may to some extent be modified by the influences of quality in foods and by vigor inherited or acquired. To increase prolificacy in ewes, therefore, it would be in order to choose rams from ancestry that have produced twins for generations previously.

From what has been said, it will be obvious that though males should have the power to transmit tendencies to prolificacies as well as to beget prolificacy in the female, it will be impossible to determine the degree of the influence which they will thus exert, absolutely or relatively, since, as previously intimated, it will be a varying quantity because of the influence from the various sources mentioned, but it is to be expected that the influence on increased prolificacy will be greatest when the influence exerted by the male and female operate in conjunction rather than in opposition. In other words, when both ram and ewe come of ancestry noted for prolificacy, than when such inheritance belongs only to one parent.

BREEDING OR FEEDING.

Howard A. Chandler.

There are what you might call two different kinds of sheepmen: the breeders and the feeders. Of course, all breeders are feeders, because they give food to their flocks; but all feeders are not breeders. Those men who have practiced both phases of the subject know how it goes; but here let us repeat a few facts about both sides, for the beginner.

In all paths of life the industrious man wishes to do all he can, but because you are a successful master of a medium-sized breeding flock it does not mean that you can make a "pot full of money" on a big drove of feeding lambs.

The life of a breeder is a steady one, and your energy is rewarded with steady increase. Any farmer can take a small bunch of ewes and turn them in some little pasture and soon he has a flock. Not every beginner can make a success of going to market and buying a big bunch of lambs and bringing them home to fatten and keep for a raise in the market. Sheep breeding is an industry which any farmer can enter into, and the field is large and there is room for all the expansion that anyone's energy could desire. Suppose you start with a small flock of grades and have a desire to some day reach the height of success. The amount to be invested in a bunch of grades would be small, so nearly anyone can begin who desires to.

Now, supposing you have started with your little bunch of grades. The first spring your crop of wool did not amount to such a large pile, so you sold it with your neighbor when he sold his. This money is placed in the sheep treasury to pay feed bills and it will pay it for the whole year. If your lambs have come early, perhaps you sold a part of them for "early lambs" along in June. Now there is more money for the sheep treasury. Soon it is time to buy a ram, and as your ideals have been high you have decided to get one of the very best obtainable. So you write to several of the oldest and most reliable flockmasters and get description and prices. Some rams are priced much higher than others, but the owners assure you that there is a vast difference in their size, quality and breeding. Finally you make your decision and send the draft for a neat little sum. In a few days the ram comes and is admired by all who see him. They all say he is about the best sheep they have ever seen, but most of them think "that fellow is crazy for paying so much for a ram. Who ever heard of paying over $15 for one?"

The next spring your lambs are the best in the neighborhood and the other farmers commence wondering if it really does pay to use good rams. By the time you are ready to sell your ram there are three or four fellows after him. You have had two crops of lambs from him and sell at a good price. Now you have added some of his best ewe lambs to the breeding flock, and when you buy another ram must have a still better one. By this time the wether lambs that have been sold have placed quite a pile to the credit of the flock in the bank. You want to still improve your flock, so you decide this time to visit one of the best breeders and importers. You go and have a thorough look through the flock and learn all you can. Finding a few ewes and a ram pretty well to your ideal, you purchase them. Now you have a little flock of pure-breds started. The next autumn you sell off your grades and add more registered ones. Now you are a pure-bred breeder and have quite good knowledge of producing the good ones. Some ram lambs are sold to neighbor breeders. The next season you show at the county fairs, but some fellow beats you in part of the classes. You decide right there that "he won't do it again." The next year you have your flock in better form and have bought a show sheep or two. This time you did well and also had good sales. Soon you will have quite a bunch of rams and perhaps a few ewes to sell, and then you advertise in some of the papers. Soon you have large numbers of sale sheep and are advertising more extensively. Your name is becoming known among the breeders and you will soon be selling to pure-bred breeders. In this business you can go on and on and strive for higher ideals.

The words just read will give you an idea of what success any industrious farmer can attain. Fully that rapid advancement has been made by many a young fellow, and that shows that it can be done. Or the following up of grade breeding can be practiced with large returns.

Now let us view the feeding proposition. First of all, you must be a good sheep judge before you are capable of purchasing a bunch of feeding lambs. Lambs must be properly bought, fed and marketed, and the time for it all is so short that it takes a veteran to make the success. The right quality of lambs in proper condition must be purchased, and then only experienced feeders can properly feed them for the greatest returns. Knowing the market enables the veteran to get his lambs on the market at the proper season. The farmer who has a little money and goes off to the market and buys a bunch of lambs, brings them home and does not properly care for them, and then markets them at a wrong season, will usually come out "at the little end of the horn," as the old saying is.

Feeding market lambs is a business by itself and should be done by those who know how. It is true that not all make a success at it. But any farmer who succeeds at anything will get along all right with a flock of breeding sheep. Don't try to do it all, because there are other business men in the world beside yourself. Put forth your extra energy in making the breeding flock better and you will be well repaid for all your time. It is a good thing not to be satisfied, but to be always working higher. Make what you have better instead of trying to branch out too wide. Get some of those old culls out of the flock and replace them with the best that can be obtained.

Breeding sheep and not feeding is the steady, profitable business for all farmers. Be sure to get good ones when you are starting, and they will yield the largest returns and will also afford you much pleasure and encouragement. It is scrub sheep that make men "tired of them." The good ones are welcomed anywhere, and the little breeding flock will yield larger returns on the investment than in anything else.

FOUNDING A PURE BRED FLOCK.

From the Ruralist.

To become successful in the breeding of pure breds we must go to work with all our energy and with an aim for the top of the ladder of success. A successful shepherd always has a love for his sheep and is always on the alert to know of any news or ways of improvement of the sheep industry. By this way he becomes well acquainted with other sheepmen, thereby opening the doors to better shepherding whenever such a chance comes his way. But before the flock is founded, as a rule, the beginner often questions himself and probably many of his neighbors as to which breed he would like best. Before a decision can be made, careful study should be made of the many involving factors. One of the greatest questions is, "Which breed would be the most profitable to me?" It certainly is well to choose a breed that you would enjoy raising, yet it would hardly be advisable to commence with a breed for which there is little or no demand. Right here is where the Shropshire leads all other breeds. It is the most universal breed almost the world over and there is always strong demand for good representatives of the Shropshire breed. But the best way for the novice to find out which breed sells best is to go to the fairs and to read the leading journals pertaining to sheep husbandry and it will soon be quite easily determined what breed does best and what breed sells best in the locality in which the flock is to be founded. Of course, if the breeder intends to build up a wide reputation he must, in order to receive the largest possible profits, choose a breed for which there is universal demand, because the increase from a large flock could not all be sold in hardly any immediate vicinity. Now that the breed has been chosen, comes another important factor—that of proper selection. The beginner, before he commences to purchase, should have a correct idea of just what his desires are. Constitution, natural coverings of flesh and breed type are three of the most essential points to keep in view at all times.

To have the greatest success in the sheep industry the beginner must choose only those sheep which have strong constitutions, for it is this that insures thrift and vigorous production.

Much emphasis must be placed upon breed types, because no breeder can derive the greatest benefits either in the sale or show ring unless his sheep show strength of character and true breed type.

If Shropshires have been chosen study the Shropshire standard and adhere closely to it. Be sure that each individual has good mutton form and a dense fleece of good length all over and under the body, and then get as many fancy points as possible, such as exceptional wool covering on head, the color of nose and legs, etc.

But whatever the chosen breed may be, learn the breed characteristics and then go ahead accordingly. In buying the foundation flock it is never best to be in a hurry. Take your time and find out what several different good breeders have to offer and then you can much oftener find sheep which come close to your chosen ideal.

Never buy inferior sheep simply because they are cheaper than the good ones. When you begin with the inferior ones it takes many, many years to get rid of this undesirable blood, while on the other hand, if the foundation flock has been good, it would always be more pleasure to care for them and also to receive the profits derived from the flock.

After the ewes and ram have been selected and the flock is founded, there are many things that will have to be considered, such as feeding, the shelter and the selling, all of which count a great deal in the profits to be derived from the flock.

First, and also one of the most essential points, is the feed. No good stockman will dispute that good feeding is one of the most essential points, in fact as important as good breeding. Without good feed no progress can be made, and it also stops the progress that has been made. But with good fed and plenty of it, or high feeding coupled with good sound judgment, every chance for improvement is pushed to the greatest possible extent.

A very large per cent of pure-bred stock are hindered more today from the lack of good feed than from any other one cause, or spoiled by overfeeding. In order to be a good feeder one must know what to feed as well as how much to feed. Corn should be fed very sparingly to breeding flocks. Plenty of clover, hay and corn fodder in the rack and oats, with a small ration of bran, and a liberal supply of roots come nearer being an ideal feed. A very large quantity of Ruta-bagas can be raised on a small patch of ground. We believe that every sheep owner should raise at least a few bushels per sheep to feed for the winter feed. Corn is all right to use as part of the ration for fattening stock, but even for rams we are fitting for sale we do not like too much corn. It does not make them as strong for the breeding season as oats and oil meal.

Breeders as a rule want to send their rams out in the best possible shape, but we would rather see one a few pounds less in weight with a good strong constitution than a big blubbery fellow that is not capable of siring a strong, robust lot of lambs. Here lies the main trouble in buying flock-heading rams, especially with rams just imported. They have as a rule been fed so high that care must be taken in reducing them to breeding condition.

Plenty of exercise and cooling foods such as roots and brans are good to reduce the flesh of the ram, but the grain ration must not be discontinued entirely. Ewes that have been highly fitted rarely prove to be good breeders.

A great deal could be written on feeds, and also in the manner of feeding, but the beginner must learn gradually from every available source.

Visiting a flock of some well-known and reliable breeder is time and money well spent. Some breeders do not lay enough stress on good shelter. We think it very important and prefer a closed shed with plenty of ventilation. It must be kept clean and well bedded, also disinfected once in a while with a good dip. We never intentionally let our sheep get wet. Cold rains are our chief cause of annoyance in this line, and it certainly causes their systems to get out of condition.

After being in such a storm it is impossible to find as many clear pink skins as before.

In the winter, when much shedding is called for, we see that the flock receives plenty of exercise each day.

Once in a great while it is so wet and stormy we do not let our sheep out, but these are exceptions in Iowa's climate.

It is not a great while after a flock is founded till a few rams and ewes are ready to sell. Then comes the idea of showing at the fairs; also advertising in a good sheep paper. When fitting for fairs every effort must be made "to win." To be defeated does some beginners more good than to win. It stirs them to more rapid improvements and to come better fitted next season.

Anyone founding a flock and caring for them as outlined in this article will find a ready sale for his surplus stock at good figures.

But start a good flock of ewes, and give plenty of good feed, shelter and advertising and you will enjoy the sheep business as long as you live, and then your boys and girls will gladly succeed you.

FEEDING THE EWE FLOCK AT MATING TIME.

"*The Ruralist.*"

Now is a time when the breeding flock should be receiving good care and feed, while ofttimes it is the case that they are most neglected. The flock is just let run on the same pasture that they have been on all summer. Such a method would err quite a ways from the best. The flock at this time of the year should be on a new patch of clover or something that way. The ewes should be gaining in flesh at the time of their mating with the ram, in order that they may have the correct beginning for raising a good strong lot of lambs the coming spring. It will always be noted that ewes which have had good feed will rear a larger number of stronger lambs than the poorly fed ones. Besides the run of good clover, it is well to give a small allowance of oats. Cut pumpkins up fine and cover them well with oats and you have a most excellent fall feed for sheep in connection with their pasture. When given such feed the ewes will get nice and smooth and plump, thereby pleasing the eye and pocketbook of any good shepherd. Ewes should be kept in strong condition all the year around, because the lamb is draining their systems to a certain degree at all times. Some breeders have the idea that breeding ewes should be thin, some exceptionally thin, in order that they may raise the best lambs. Yet it has been demonstrated time and time again that the best feeders are the most successful in live stock circles. The breeder who doesn't feed his ewes well will wonder why his ewes did not drop a large number of twins, or why his ewes do not give a liberal flow of milk for the little lambs, while the good feeder and careful shepherd will be rejoicing over his large number of lambs and how strong they are and how they start right to growing. The sheep breeder has his choice of the above two circumstances and now is the time to commence for results. Feed the ewes well in the fall and get them well prepared for winter, and then when winter comes keep them right on going by feeding clover, fodder, oats and bran and whatever other strength-giving foods that are at hand, but it is always well to avoid feeding much corn to breeding sheep. Many of the best shepherds are careful to remove a majority of the corn from fodder given the flock. Corn tends to fatten, and it is not fat that is desired. The aim should be to keep the flock in perfect bloom, strong and full of vigor at all times. The good and judicious feeder always has a good demand for his surplus stock at good prices and most certainly receives good pay for his work and feed expended. There is a large reward awaiting the man who will produce better sheep than have ever been produced, and, although it would be hard to reach that goal, the nearer you approach it the larger the profits.

GESTATION TABLE.

Farmers' Tribune.

Here is a gestation table arranged for convenient farm use. The first column gives the date of service. The columns headed "mares," "cows," etc., give on the same line the date when the progeny may be expected from such service. For example: If the date of service of a mare is January 1 she will foal December 6. A cow served on the same date would calve October 10, and so on for ewes and sows. The table follows:

Time of Service	Mares 340 Days	Cows 283 Days	Ewes 150 Days	Sows 112 Days
Jan. 1	Dec. 6	Oct. 10	May 30	April 22
Jan. 6	Dec. 11	Oct. 15	June 4	April 27
Jan. 11	Dec. 16	Oct. 20	June 9	May 2
Jan. 16	Dec. 21	Oct. 25	June 14	May 7
Jan. 21	Dec. 26	Oct. 30	June 19	May 12
Jan. 26	Dec. 31	Nov. 4	June 24	May 17
Jan. 31	Jan. 5	Nov. 9	June 29	May 22
Feb. 5	Jan. 10	Nov. 14	July 4	May 27
Feb. 10	Jan. 15	Nov. 19	July 9	June 1
Feb. 15	Jan. 20	Nov. 24	July 14	June 6
Feb. 20	Jan. 25	Nov. 29	July 19	June 11
Feb. 25	Jan. 30	Dec. 4	July 24	June 16
March 2	Feb. 4	Dec. 9	July 29	June 21
March 7	Feb. 9	Dec. 14	Aug. 3	June 26
March 12	Feb. 14	Dec. 19	Aug. 8	July 1
March 17	Feb. 19	Dec. 24	Aug. 13	July 6
March 22	Feb. 24	Dec. 29	Aug. 18	July 11
March 27	March 1	Jan. 3	Aug. 23	July 16
April 1	March 6	Jan. 8	Aug. 28	July 21
April 6	March 11	Jan. 13	Sept. 2	July 26
April 11	March 16	Jan. 18	Sept. 7	July 31
April 16	March 21	Jan. 23	Sept. 12	Aug. 5
April 21	March 26	Jan. 28	Sept. 17	Aug. 10
April 26	March 31	Feb. 2	Sept. 22	Aug. 15
May 1	April 5	Feb. 7	Sept. 27	Aug. 20
May 6	April 10	Feb. 12	Oct. 2	Aug. 25
May 11	April 15	Feb. 17	Oct. 7	Aug. 30
May 16	April 20	Feb. 22	Oct. 12	Sept. 4
May 21	April 25	Feb. 27	Oct. 17	Sept. 9
May 26	April 30	March 4	Oct. 22	Sept. 14
May 31	May 5	March 9	Oct. 27	Sept. 19
June 5	May 10	March 14	Nov. 1	Sept. 24
June 10	May 15	March 19	Nov. 6	Sept. 29
June 15	May 20	March 24	Nov. 11	Oct. 4
June 20	May 25	March 29	Nov. 16	Oct. 9
June 25	May 30	April 3	Nov. 21	Oct. 14
June 30	June 4	April 8	Nov. 26	Oct. 19
July 5	June 9	April 13	Dec. 1	Oct. 24
July 10	June 14	April 18	Dec. 6	Oct. 29
July 15	June 19	April 23	Dec. 11	Nov. 3
July 20	June 24	April 28	Dec. 16	Nov. 8
July 25	June 29	May 3	Dec. 21	Nov. 13
July 30	July 4	May 8	Dec. 26	Nov. 18
Aug. 4	July 9	May 13	Dec. 31	Nov. 23
Aug. 9	July 14	May 18	Jan. 5	Nov. 28
Aug. 14	July 19	May 23	Jan. 10	Dec. 3
Aug. 19	July 24	May 28	Jan. 15	Dec. 8
Aug. 24	July 29	June 2	Jan. 20	Dec. 13
Aug. 29	Aug. 3	June 7	Jan. 25	Dec. 18
Sept. 3	Aug. 8	June 12	Jan. 30	Dec. 23
Sept. 8	Aug. 13	June 17	Feb. 4	Dec. 28
Sept. 13	Aug. 18	June 22	Feb. 9	Jan. 2
Sept. 18	Aug. 23	June 27	Feb. 14	Jan. 7

Time of Service	Mares 340 Days	Cows 283 Days	Ewes 150 Days	Sows 112 Days
Sept. 23	Aug. 28	July 2	Feb. 19	Jan. 12
Sept. 28	Sept. 2	July 7	Feb. 24	Jan. 17
Oct. 3	Sept. 7	July 12	March 1	Jan. 22
Oct. 8	Sept. 12	July 17	March 6	Jan. 27
Oct. 13	Sept. 17	July 22	March 11	Feb. 1
Oct. 18	Sept. 22	July 27	March 16	Feb. 6
Oct. 23	Sept. 27	Aug. 1	March 21	Feb. 11
Oct. 28	Oct. 2	Aug. 6	March 26	Feb. 16
Nov. 2	Oct. 7	Aug. 11	March 31	Feb. 21
Nov. 7	Oct. 12	Aug. 16	April 5	Feb. 26
Nov. 12	Oct. 17	Aug 21	April 10	March 3
Nov. 17	Oct. 22	Aug. 26	April 15	March 8
Nov. 22	Oct. 27	Aug. 31	April 20	March 13
Nov. 28	Nov. 1	Sept. 5	April 25	March 18
Dec. 2	Nov. 6	Sept. 10	April 30	March 23
Dec. 7	Nov. 11	Sept. 15	May 5	March 28
Dec. 12	Nov. 16	Sept. 20	May 10	April 2
Dec. 17	Nov. 21	Sept. 25	May 15	April 7
Dec. 22	Nov. 26	Sept. 30	May 20	April 12
Dec. 27	Dec. 1	Oct. 5	May 25	April 17
Dec. 31	Dec. 5	Oct. 9	May 29	April 21

COST VS. VALUE OF A GOOD DAIRY SIRE.

Wilbur J. Fraser, Chief of Dairy Husbandry, University of Illinois, in Wallaces' Farmer.

A few poor cows may do little permanent harm to the dairy herd, but a poor sire will do untold damage. Frequently dairymen hold the penny so close to the eye it is impossible to see the dollar a little farther off, and this is just what a man is doing who has a good dairy herd of grade cows and thinks he is economizing by buying a poor or even common sire.

If the good pure-bred sire improves the milking capacity of his daughters only one and one-half pounds of milk at a milking, above the production of their dams, this would mean an increase of 900 pounds of milk for the ten months or 300 days an ordinary cow should give milk. The daughter would also be a much more persistent milker; that is, would give milk for a longer time in the year, and she would regain her flow of milk better after an unavoidable shortage of feed as in a summer drouth. These daughters may certainly be credited with 1,000 pounds more milk per year than their dams produced. At the low estimate of $1 per 100 pounds this extra amount of milk would be worth $10 per year. The average cow is a good producer for at least six years, or until she is eight years old. It will on the average be four years after purchasing the sire before his first daughters will have brought in the first extra $10. Eight dollars and twenty-three cents kept at compound interest for these four years at 5 per cent will equal $10, so the daughter's improvement or increase of income the first year is worth $8.23 at the time her sire is purchased. The cash value of the daughter's improvement (inherited from the sire) figured in the same way for each of the six years she gives milk is shown in the following table:

Improvement first year	$ 8.23
Improvement second year	7.83
Improvement third year	7.46

Improvement fourth year	7.11
Improvement fifth year	6.77
Improvement sixth year	6.45
Improvement for six years	$43.85

The total increased income of a cow over her dam by having a good sire is therefore $43.85.

In an ordinary dairy herd of thirty-five to forty cows an average of seventeen heifers per year should be obtained, and twelve of these should be worth raising, making it easily possible for a bull to earn twelve times $43.85, or $526 per year. This would amount to $1,578 in the three years that a bull is ordinarily kept in service.

Cost of providing every heifer one good parent:

	Pure bred.	Scrub.
Cost of sire	$150.00	$ 30.00
Interest, three years, 5 per cent	22.50	4.50
Cost of keeping three years	100.00	100.00
Risk, three years	50.00	10.00
Total expense, three years	$322.50	$144.50
Value at end of three years	100.00	30.00
	$222.50	$114.50
	114.50	
Extra cost good sire, three years	$108.00	
Extra cost good sire, one year	36.00	
Extra cost good sire, one daughter	3.00	

Considering the male calves as worth no more than if sired by a scrub, it would then cost $36 to provide one good pure-bred parent for the twelve heifer calves which are raised each year, or $3 per heifer. Where else can such an investment be found? Three dollars expended brings in an average return of over $7 per year for six years, or $43.85 in all. This makes a clear addition of $43.85 to the income of each daughter, or a net profit of $40.85 and of $1,470 for thirty-six daughters in the three years. Here is nearly 1,000 per cent profit on the investment. The original cost of the good sire looks very small beside the $1,470. It really pays, as nothing else on the farm pays, to put $150 into the right kind of a dairy sire that will return practically ten times $150 within three years.

An examination of details will show these estimates to be conservative. There is plenty of margin left for failures and unfavorable conditions. One thousand pounds of milk per year is a conservative estimate of the improvement of the daughter's production to credit to a good sire, but the details of figuring it may be varied to suit conditions in different herds and different localities. One hundred and fifty dollars is certainly a liberal allowance for the purchase of a pure-bred sire, and results here named are based upon having a first-class animal at the head of a herd. A herd of only thirty-five or forty cows is taken for illustration, while a vigorous sire properly fed and exercised is sufficient for a herd of forty-five to fifty cows, providing he is not allowed to run with them. There is another distinct improvement of the good sire's daughter besides her milk production; it is the improvement of her blood or breeding, as the result of which her daughters will be better milk producers. This blood impovement of all the daughters accumulated through a series of years means a remarkable increase in the efficiency of the herd.

It is the common experience of all dairymen who have used a really good improved dairy sire that the investment has made them royal returns. The $150 cost price looks "too big" only to the narrow vision that cannot see the natural improvement of the herd certain to follow. Many a dairyman might have reason to say that he cannot afford to pay a big price for a fine cow, but the same argument does not apply at all to the purchase of an improved bull, because the sire's influence spreads so much farther and faster than that of the cow.

If the heifer calves are to be raised for dairy cows there is absolutely no business or reason on earth for keeping a scrub bull. The dairymen who think there is pay a heavy price annually for maintaining that tradition. The scrub bull is the most expensive and extravagant piece of cattle flesh on any farm. He does not stop at being merely worthless, but will lose the farmer the price of two or three good bulls every year he is kept. The dairyman could not afford to keep a scrub bull if the animal were given to him, if he were paid for boarding the beast and given a premium of $100 per year for using him. The presence of the scrub sire in so many Illinois herds—many times without a single qualification except that he is a male—is an offense and disgrace to the dairy business and a plain advertisement of the dairyman's thoughtless bid for failure. The only thing on earth the scrub sire is good for is sausage, and it is high time that this plain and simple truth was given practical acceptance on every dairy farm.

By all means get a good dairy sire, if you have to sell two or three cows to do it. The improved sire is without question the most economical investment in any dairy herd.

THE GENERAL PURPOSE COW.

C. B. Knowles, La Porte City, Iowa, before Black Hawk County Farmers' Institute.

In approaching a subject like this, "Which is the better for the farmers of this community to breed, the general purpose or the dairy breed of cattle?" one is bound to try to generalize the conditions surrounding the average herd of cattle and their respective owners, all the while contemplating what is or should be the most profitable purpose for which these cattle are raised and kept. In looking the ground over and reviewing the cow history of this section we find that the larger droves of the past were a very indifferent class indeed of native or "scrub" cattle, as they were termed at times. They were raised mostly for beef, with just enough milking done to supply the table with those things of which milk, butter and cream were the component parts and inspire the barefoot boy with cheeks of tan with a mad desire to enlist or go to sea or some other equally safe and congenial place where the sloppy surroundings of the cow-shed were conspicuous by their absence. And if there is any one thing about the farm that is calculated to make a boy want to turn pirate it is manipulating the mammary glands of a refractory female bovine by the light of the pale moon or a vile smelling lantern under the conditions that used to prevail in this section.

Entering into the proposition in the first place was the cow of uncertain lineage who gave at best but a portion of the mess required today. This creature, whose breeding was mainly just "cow," was not exactly a thing of beauty and a joy forever in all ways, but she got there just the same in many and was really the general purpose cow in the widest sense, for did she not provide us both beef and milk for our inner man, leather and tallow to shoe us and lighten our ways; but also was she not the mother of the ox whose very name furnished our early pedagogues such an excellent word with which to start us on the sea of knowledge? I believe that the word cat is used since oxen have gone out of fashion. And what could we have done without that self-same ox wherewith to scratch these wide, expansive prairies of Iowa and tickle the face of Mother Earth until she laughed with ever-increasing bountiful harvests and got into the Iowa habit of bumper crops that are renowned the world over? All honor to the cow of our daddies; she was a diligent, faithful, dear old creature in many ways, and filled her place nobly, raising descendants who have in many instances been worthy of their breeding, lining their owners' pockets while helping to lift mortgages, clothe children, enlarge farms, pay preachers and provide for old age and dependent relatives.

A glance back down the vista of vanished years, searching for past experiences that will guide us in our search for the ideal cow of the future, reveals the fact that conditions have changed so that we must of necessity have something different from the critter who very properly was the mother of a sturdy race of work-oxen and furnished the table with cow delicacies. With very little and poor shelter, ofttimes tethered to the lee side of a threadbare haystack in winter and running at large in summer—and when we say running you may take it literally, for didn't old Tige or Rover, as the case may be, stimulate their lagging tendencies in the Junetime of that summer long ago as they were driven up from the woods or dogged out of the corn upon occasions when they had crawled the wormiest kind of a worm fence? What would you expect such a condition of things to produce in the way of a milk cow? A good one? Not on your life. Imagine one of our placid demeanored cows of today, with the generous milk veins and pendant udder, racing and tearing over stumps and stones, across half-cleared patches, swimming creeks and wallowing through mud to the merry tune of some savage biting cur who was apt to deprive such as he was able to outrun of their sole defense from the attacks of flies, gnats and mosquitoes, leaving only a stump whose frequently resounding thwack on the cranium of her milker was the only protest she was able to offer for such curtailing. Would such treatment improve her disposition or milk-giving qualities, think you? No! But in the past the creature that was able to withstand such strenuous shocks served many and efficient purposes in the economy of the community. But today conditions have changed and are so different, land values are so much higher, range even in the extreme west is so reduced and everything so specialized in all lines of business that to succeed as the general manager of a bunch of cows one must study the actual conditions surrounding them in detail and select a breed which will produce what he finds will be the most in demand and consequently the most profitable. In this community there seems to be a steady demand for both beef and butter, and I suspect that like conditions prevail in most farm districts that are in easy reach of creameries and centers of population and the production of both is not only profitable but necessary. We have now reached the dividing of the ways and upon admitting that there is a place for both the beef and dairy types here the only question remaining for us to answer is if both are to be secured from one breed, as the little Devon or Brown Swiss, or perhaps some milking strain of some beef breed, or shall the milk producer keep the special dairy cow, as the Jersey, Guernsey, Holstein or Ayrshire, and allow his neighbor who grows some beef to keep the large, fine-looking beef breeds, all the while smiling at the delicate, modest herds of high-strung fawn-like creatures whose pailing qualities are their main recommendation to consideration and referring to their owners as men who haven't money enough to buy cows and are ashamed to milk goats.

On large farms, where considerable quantities of feed are produced or can be bought cheap, where forage is abundant and whose owners contemplate fattening many steers, thus converting this cheap feed into beef, it is perhaps better to raise the dual purpose cow, but if beef is to be the only end why not cleave to one of the many excellent beef breeds with which we are so well supplied? In the case just spoken of don't try the Jersey, as she might have calves, and the calves might be steer calves; which I find for some strange reason to be 'persona non grata" in the feed lot. I remember hearing a pillar of respectability offer a Jersey heifer's calf for $2 and upon the transfer taking place the purchaser raised his voice in lamentation when he found that he was the possessor of a Jersey steer. He was promptly informed that he had been told in the first place that it was a Jersey heifer's calf and that the question of sex had not been referred to.

On the other hand, the small farmer who milks cows as a business and is not prepared to give steers the whole course from the cradle to the grave had better keep an exclusive dairy breed and try to sell his steer calves to the folks across the river or any one who thinks he can produce beef from them at a profit. He will find his little cow as big in the bucket as the biggest beef bred animal if not more so, weight considered; and certainly more profitable for milk as she has a far smaller body to be carried over the dry seasons, and the periods of drouth are apt to be shorter and less often. Gov. Hoard whose utterances have ever been "cow gospel to the dairy man," is authority for the statement that somewhere near 60 per cent to 65 per cent of the feed consumed must, under the best of conditions, go to the keeping up of the repair of the bodily tissues of the cow and the milk must be made from the remaining 35 per cent to 40 per cent. It follows that with the lighter dairy cow there is less feed needed to maintain the animal itself, while with the highly specialized milk producing apparatus and shorter period of vacation it produces in the whole year a quantity of milk far in excess of the beef bred cow from wherever she comes when weights of cows are compared.

Many of our leading agriculturists who have for years advocated the dual purpose cow are abandoning their positions on the subject and have given up in despair the breeding of cows combining both characteristics. Witness the lamentable collapse of the Red Poll boom which has proven a very indifferent beef as well as milk animal.

It is so often found that where both these opposite tendencies are at work in the same breed that it is almost impossible to be sure that the heifer shall be a good milker and the steer shall be a good beef animal. The results seem to be very uncertain and more than one farmer has imparted to me in confidence that though he has always kept his best milkers for breeding purposes, somehow it seemed as though his heifers never would quite come up to the standard of the old cows. I have in mind as I speak one who to my knowledge had several excellent milkers, some ten years ago, the descendants of which today on his place are very indifferent in milk producers.

But after all has been said the blooded beef bred cow that is milked some has a place and quite an important one as the matron of and the instructor in primary methods to her vast family that produces the steers required to furnish our cuisine with the juicy roasts and savory steaks, soups and stews that seem to be ever in more demand as the bonds of the Anglo-American alliance tighten. She belongs where land is cheap and forage abundant and where some way of harvesting the rich succulent grasses of the plains and producing from them a product in a condensed and convenient form for shipment to a distant market is essential.

But as the value of land rises we will gradually drift into more dairying with better dairy methods. On high priced land it seems almost impossible to keep up the fertility of the soil and produce sufficient to pay taxes and interest on the money invested without milking cows. But regardless of the breed the farmer of the future will have to know just what each cow is doing for her country and weed out all drones. He will have learned that proper milk producing feed in sufficient quantities, correctly balanced, is essential to produce a profitable increase over just living in which all the feed given is thrown away. His methods of feeding and caring for cows will be vastly in advance of ours and he will use the scale and weigh sheet at each milking of each cow. Frequent tests of the cream content and actual butter possible to produce from each cow's milk will be made. When the question of severing connection with one of these faithful, well kept cows is taken up her past record will be gone over in detail and if it is one at which she can point with pride perhaps it may lengthen her term of office as one of our milk producers. This is said to be one of the secrets of the success in breeding dairy cows on the island of Jersey, where about ten thousand cattle are kept on the island of only about ten thousand acres extent. They are ever selling their best and producing still better.

I have sometimes thought that perhaps part of the hustle to maturity on the part of the Jersey calf was its effort to get big soon to avoid its early diet as soon as possible. It seems that cod-liver oil forms quite a part of its early food on its native heath.

This may account in part for the scarcity of consumption among Jersey cattle.

BUILDING UP A DAIRY HERD.

From Pennsylvania Department of Agriculture Bulletin No. 154.
By Mr. Edward Van Alstyne, Denmark, N. Y.

I want to talk to you in a very practical way, to, I presume, a company of very practical men. I suppose the aim of this address is that we may obtain a more profitable cow in our dairy. And in what I have to say to-day, as well as to-morrow, I wish you to understand that it is not to the wealthy man, the man with unlimited means at his command to purchase the very best that money can buy, that I am talking; he is not the man that I have in view at all; he is a very popular factor in society, but the man whose every wish is obtainable is not the man that I have in sight. It is the ordinary man, like myself. I say this because I think it will be best for us to clearly understand one another.

I think that we to-day want a better dairy cow than ever before. I say that, because I fear that in many instances the farmer is keeping his cows with but little profit. What is the profit on the dairy cow? Is it that she simply pays for he keep, and makes a minimum of profit? That is not going to pay off the mortgage, and clothe the children, on the farm. The first thing we expect of a cow is that she will pay interest on the money invested in her. If we take three or five hundred dollars to the savings bank, we get three and one-half per cent interest, without the trouble of working for it. If we put it out at interest, we get from five to six per cent; as you increase the risk, you increase the interest. When we invest it in a cow, three and one-half per cent is not enough, nor five, nor six per cent, because we are not sure that we can get it back when we want it. I find that in a herd of twenty-five cows it is necessary to replace at least five each year to keep the herd in good condition. Some of them may go barren, and some of them may lose part of the udder, one may die. So I figure that on the money invested in the dairy cow, I should have at least ten per cent to equal the interest on the same amount of money invested elsewhere. So if we pay fifty dollars for a cow we should have at least five dollars profit on her. The next practical thought is her feed. As I said before, she should pay for her keep before we begin to make any profit on her. And the labor; what does it cost to milk her three hundred days in the year, Sundays and holidays included? At least ten dollars more on that. So I figure that I must have at least ten dollars over and above the cost of her feed, and the interest on the money invested in her, before I begin to make money on her.

Now, we have to have a better dairy cow, and I am very sure that it is not of any particular breed. A man starts out thinking he is going to make money right out of this particular breed, or that one. Now, let me say that each particular breed have their use for special purposes. I want to make myself clear on this point, because you may infer from what I say later on, that I am not a believer in pure bred cattle for the ordinary man. Yet I am a most firm believer. I believe firmly that all the best things we have in our dairy herd today are the result of careful breeding. We will take the superb Holstein, which for two thousand years has been bred in Freisland, Holland, where she is given a large amount of rather bulky feed, with a view to producing large quantities of milk, without reference to quality, and in which purpose they have succeeded. The Holstein will produce a quart of milk—regardless of its interest—on the feed given her cheaper than any other cow. Then we will take the Jerseys and Guernseys, bred on the rocky Channel Islands, milk high in fat and other solids and yellow, more scant in quantity than is that of the Holstein. They have not been bred so much to produce a large quantity of milk, as to produce one high in fat with a large globule, easily churned when made into butter. They have succeeded in that as the Holstein breeders have succeeded in their object. The Channel Island cattle produce a pound of butter cheaper than any other cows on earth. Not only because she produces butter cheaper, but because she produces a better butter. That is where many have fallen down. At the Buffalo exposition it cost for food, for the Holstein cattle to make a pound of butter, about twelve cents. The Channel Island cattle, butter for food costs about nine cents. You can't improve on the cream or butter of the Channel Island cattle, because they are bred for that purpose. I will illustrate this: Those of you who were at the Exposition will remember that we had a small dairy-room that was often at a temperature of seventy degrees. On those hot day we took the cream from any other breed than the Channel Island cattle, and churned it at sixty degrees, we had grease pure and simple. We had to take such cream and reduce it to a temperature of forty, and then churn it for two hours, before we had butter, and then we often had to set the butter away for twenty-four hours before it was hard enough to print. We could take cream from the Channel Island cattle, churn it at between fifty and sixty, take it out of the churn and print it and set it up on the form no matter what the temperature. Therefore I say that the Holstein is not the cow for the man who wants to make butter for the market. The man who wants rich milk or who wants to make butter is a very foolish man if he attempts to make it from any other breed than those bred for that purpose. But there is a cow between the two, the Ayrshire, from Ayr, in Scotland, where they have not so much feed to give her, and she has had to hustle for her living. She gives a large supply of milk, with about four per cent fat. For the man who wants a good milk, and fair quality, where the feed supply is not abundant the Ayrshire is the cow. Again, the man who wants to make beef is very foolish if he attempts to make it from any other breed than those bred for that purpose, such as the Short-horns or Hereford. You see I am not a believer in the dual purpose cow. You say you want a cow on which you can make a little on the milk, a little on the butter, and a little on the carcass, but you can't do that and not lose in every respect. I will take for illustration, the Holstein, the extreme dairy breed, and the Hereford or Short-horn, the extreme beef bred. We will put both on the market, both equally well fed, and weighing the same, and the Hereford will bring from one-half cent to one cent per pound more than the other. Why? Because the Holstein is developed in the lower portion of the body and the other up where the cuts are worth the least, in the back and loins. Again, the man who attempts to use the beef cow in the dairy, is as foolish as the man who would hunt birds with a bull dog. Get cows of the type that will fit your needs. "I thought," you will say, "you said you were going to talk to the average farmer, and now you tell us to go to an importer and buy our stock." Yes, if you have plenty of money which most of us haven't.

We have come to the point where most of us realize that we must have a better dairy cow, and that a cow that has been bred for a particular purpose. What shall we do? We go to a man who has good pure bred cows for sale, and select some that we think will answer our purpose and find that they will cost from one hundred and fifty to two hundred and fifty dollars each, and we can't afford to take them. The animals are worth it, but we simply can't afford to pay the price. What then? We have our heads set on pure bred stock, and we go down the line until we find something that fits our pocketbook, and we say "these are pure bred?" And they answer "Oh, yes." "They are registered?" "Oh, yes." And we buy them, and take home the man's culls. He wouldn't have sold them at that price if they had not been culls.

I repeat that these animals have been bred for the particular purpose for which we want them. When we have made up our minds we want a large supply of milk, and have plenty of feed, then we take the Holstein; if butter, then we take the Channel Island cattle; if better milk, and hilly pastures, then we take the Ayrshire, and if meat, then we take the Hereford or Short-horn. A good cow is cheaper at sixty dollars than a poor one is at ten. I am going to describe the requirements of a good cow a little later. With the best grade of the particular type desired, we will get a bull of the breed we want. Let me emphasize the importance of a good bull. The importance of pure breed, I don't think we emphasize that as we should. When we consider the breeding of animals, the strain of the sire should be very carefully noted. Why, gentlemen, what is a pure bred animal? It is simply one that has been bred in a certain line so long that the type has become fixed. There is always a tendency to go back to the characteristics of the ancestors, and the better these characteristics and the longer they have been bred, the nearer we get to the animals we want, and the more certain we are of producing the tendencies of that line. The more we breed, indiscriminately, the more likely we are to go back to the original tendencies. To illustrate this, let us take the human family, and go right back to the Jew. Since the days when Abraham went out from Ur of Chaldea and went whither he knew not, down through the centuries, there has been the Jew, and to-day when for more than two thousand years he has had no country, he is as separate and distinct as he was four thousand years ago in Palestine. You can pick him out to-day by his facial characteristics, and by the same characteristics which Jacob exhibited when he entered into that cattle deal with Laban, and in Joseph, when he got up that corner in grain. Scan their names and you will find them foremost in finance, in music, in trade and in politics. They are masters of whatever they undertake. Why does the Jew succeed in spite of the persecutions he has endured? Because he is smarter than the other fellow. It is just this: The marriage of Jew with Jew, the breeding of the racial characteristics, until we know to a certainty when we see a Jewish family, that the child is going to be the same Jew that his parents are.

And this is the way our type of domestic animals is fixed. You will buy a sire of the best breed. I believe it is more necessary for me to have a good sire in my herd of grades, with his breeding capacity proven, than it is for my neighbor, who is breeding pure breeds entirely. He has the pure blood in his cows. You get a grade sire, the descendant of pure blood on one side and of anything on the other; you breed him with a good cow, and you say he will reproduce the traits of his pure breeding; how do you know this? There is always a tendency to go back to the traits of the ancestors, but how do you know that he will not produce the bad traits, instead of the good ones? He is just as likely to do so.

Then comes the cross-bred, the result of breeding two pure breeds together. For instance, I will take a Holstein that gives plenty of milk, but it is not rich, and I will breed him with a Jersey who has plenty of richness but not so much milk, and then I will have the excellencies of the two? What is the result? I get the quantity of the Jersey and the richness of the Holstein. It is the old story of avatism, the going back to the original tendencies of the ancestors. Darwin in his "Origin of Species" claimed this, and made the statement that all breeds of pigeons could be traced back to the old Blue Mediterranean pigeon. To prove it, he crosed the Pouter and the Fan Tail and what did he get but the blue tail feathers of the Mediterranean pigeon. We see the same thing in our cross-breeding. When we bring together two pure breeds, we increase, for some unknown reason, the tendency to get the bad qualities of both lines. I can bring this right down to you. It is not the simon pure negro that causes the most trouble; it is the mulatto, who developes the worst traits of both his black and white ancestors. We have the same thing in the Indian. Up in New York, we have not many Indians, but we still have a few, who are a conglomeration of the old Six Nations mixed with whites, combining the evil traits of the white blood in them, with the same traits of their red blood. They are the laziest and most shiftless beings on earth. They won't work if the can beg or steal. I could not help, at the Exposition, but compare them with the real simon pure Indian of the plains. You know they had an Indian village there. These were dignified, a fine type of pure breeding, the other, the evil product of the two races. Perhaps I am spending too much time on this, but I realize the importance of it.

We had first the grade sire, then the cross-bred sire, but what we want is a pure sire. So we get one, and use him with the herd, and if his calves are what they should be, and he proves to be a good animal, we will keep him just so long as he is serviceable. There is more deterioration to be laid to the yearling than from most any other cause. We want the strength and stamina of fully matured ancestors. I prefer to have a bull eight or nine years old; I never know just what he is going to do until he is four years old. I sacrificed one of the best bulls that I ever had when he was three years old, and never knew it until his daughters came to milk. So I have learned to keep my sires just as long as they are serviceable. With grades, I would use a bull with his daughters. You will say this is incestuous breeding. That is true, but when we bring these two lines of blood together we get three-quarters of the line-blood that we want. If there are no weaknesses in either sire or dam there will be little to fear from such a course. And when we buy again, buy a bull that is bred along that line. That is where many a farmer makes a fearful mistake; he would like a little more size, so he takes another breed to get it; he would like a little more butter, so he goes to the Jerseys to get it, and perhaps he would like a little more beef, so he goes to the Hereford to get it. He is like the woodchoppers; they were Canucks, their work was cold, and they generally wanted a little something to warm them up. On one occasion they tried to tell the landlord at the tavern what they wanted; they didn't know the name, so the Canuck said: "You take a little whiskey to make it strong, and a little water to make it weak; a little lemon to make it sour, and a little sugar to make it sweet." "Oh," said the landlord, "that is a flip." An so it is with our farmer. You get a little Holstein for the milk, and a little Jersey for the cream, and a little Short-horn for the beef, and you have a "flip" every time, and if I want to see poor cattle, I will go to the place where they have followed this course.

When I went into breeding, I raised all my heifer calves. But there was something wrong; I didn't get results; so I said "I will have to be more careful," and I selected them only from the best cows, and I got nearer what I wanted, but I still drew a good many blanks, until I began to examine the calves themselves. Now it is a fact that a good many heifer calves fail to be as good as their dams. Do you ever think how much we ask of the dairy cow? We ask her in twelve months to support herself, to reproduce herself, and give us an amount of milk often equal to the weight of her body. Now I have begun to examine my calves, and if I find a calf that is weak, and aenemic, I don't try to raise it, and this you can tell by looking at the calf. Open its mouth and look at its teeth, and if you find only four of the milk teeth, that calf is not worth raising. Why? That mother had too much of a strain on her, and she was not able to put strength and stamina into the calf she was raising. I have raised some of these calves, and they have always been a disappointment. Then I examined the naval, and the teats; one of the tests of a good udder is to have the teats placed right. This fall I was a judge at a fair up in my state, and man brought in a heifer. She was a fine Jersey, and I thought "that is the prize winner, sure," until I examined her udder and found two of the teats joined together.

I asked him why he raised her, and he said he never looked at that; he had never seen it.

Now, when a calf passes muster, then we keep it, but do not forget that their value as cows will depend largely upon their treatment for the first two years. They must be well cared for. After the first few months it is better to turn them out and let them work a little for their feed; it helps to develop them. They should have a large stomach, for it shows great storage capacity, even if it makes them appear pot-bellied. They must have a place where to carry the feed. I was at Moorestown, New Jersey, last winter, to see a herd of cattle that were large producers. I saw nothing abnormal about the cows except that they all seemed unusually large, and that many of the two-year-old heifers were larger than those two and a half and three years old as usually seen of that breed. I could not understand it until they told me that they fed those calves on milk until the were a year old.

Now, then, we have selected our stock, and are breeding along that line year after year. We have found what we want, and we will go on breeding along that line, and in ten or twelve years we will have a herd that is nearly equal to pure bred. They are really pure bred, only they can't be registered. When we are adding to our stock we will get in one or two good pure bred females, and at the end of ten or twelve years we will have a herd of fine, pure bred stock, and when we come to sell them we can get better prices for them.

Now, all good cows have certain points. What are they? To show them I have had the picture made. It is a very fair picture of a good grade cow I had. First, let us see the characteristics of the cow of way back. Now, the cow that Adam had after he left horticulture, was not much of a cow. What was she? Well, she was fitted for her work. She had to live out in the jungle, and fight for her existence with the wild beasts, and it was a case of the survival of the fittest. She had to fight her way through the heavy brush and overhanging trees. Let us see her characteristics: A small barrel, for she had only what food she found closed ribbed for protection; a small udder; a short neck and heavy horns, characteristic of the fighter. We should call that a very sorry cow, but she was probably the best suited to the times and her environment. Now, as to the points of the good cow: We cannot fail to be impressed by her girth through here (the body), by the large nostril, and bright eye. The animal that has a prominent and snappy bright eye is the one that is likely to have a good constitution. The large wide nostril means a good pair of lungs; and a heart that is doing its duty. Then we have the thin head, with light horn, and prominent pointed shoulder; the sharp, not flat back, widespread at the haunch, to insure easy delivery of the calf; ribs well set; high pelvic arch, long tail. What has the tail to do with it? Only this, that tail is the extension of the spinal column, and a long tail indicates a strong nerve force.

We can just as well breed good udders and easy milkers as the contrary. I have to-day descendants of the fourth generation of easy milking cow, and they have all more or less of her tendencies. Then I have two or three heifers descended from a cow that was not an easy milker, and I don't raise any more of them. Life is too short.

Then comes a large, crooked, milk vein. Some people are rather inclined to ridicule that, but I have found it a good test. It shows the flow of blood from the udder to the heart. Now, when there is not much milk, there is not much blood there. What I lay most stress on is the hole in the end of it; if the hole is large, it indicates that it is built to carry plenty of blood. We will probably find this larger on the left side than on the right. These are always things that are present in a good dairy cow, and they are characteristic of a good dairy cow. We find the same characteristics in the sire.

I want the head and neck to be thin. I want him to have the same arched spine, and the same contour here as in the cow, and I want to find four good, rudimentary teats in the sire, which are well placed. I lay great stress on their being placed, because the sire reproduces himself, and you will find four times out of five that the teats of the heifer are much the same as the rudimentary teats of the sire. Then I like to see a good milk vein. Then I take the loose skin at the flank and stretch it; if it stretches out long an flexible, it is a good indication of the udder on his heifers. I was judging at a fair up in Washington County, my state, and there was a farmer there who was in the habit of carrying off the prizes each year, and I gave him a premium for one or two of his cows, but none for his heifers, and none for his sire. He came to me and said, "I wish you would tell me why you turned down my bull and my heifers," well, we brought out the bull; I could not find in him any of the rudimentary lines. He said he never knew of the existence of anything like that. Then we looked at the heifers; not one of them had an udder bigger than a sheep, and he said he was disappointed in them, but didn't know the reason. He didn't take offense at being turned down, but declared his intention of trying to breed along the lines I had pointed out to him. In this case, the sire simply reproduced himself.

I want a good bull with good ancestry; the best I can get; but when we get to a place where we must choose between a bull with a good registered ancestry of performances and is not himself a good specimen, and one who is a good individual, I would rather have a bull that has the record of performance every time than the one with no known ancestry, but a good individual. Keep a record of his milk strain and breed from that. Give me a bull with an ancestry of producers, and he will produce himself in his descendants.

Given these things, I know we can develop a herd of better quality and better producers than we can in any other way.

The Chairman—We might devote a few minutes to the discussion of Mr. Van Alstyne's address.

Mr. Rodgers—What effect would it have on the cream where a farmer keeps one-half Holstein and one-half Jersey cows? Would it churn together properly?

Mr. Van Alstyne—Yes; there would not be so much loss if separated by machine. Of course, we know that cream passes in the separator as rapidly as the gravity allows, and the butter globules would not be mixed with those of the Jersey, and it would not turn out quite so rich. And there is another point: what makes a good ration for the Holstein will not make a good ration for the Jersey. So I would rather have them one grade. Now, a man may have to keep a Holstein and a Jersey if he sells the milk, to make it a little rich. I have heard people say that the butter of the Holstein was of excellent flavor, while that of the Jersey was not so ideally flavored. That is not so at all. It is due to the feed and to the manipulation of the cream.

Mr. McCreary—A yellow skin on the animal, would that count in its favor?

Mr. Van Alstyne—A yellow skin on a Holstein, as well as on any other animal, will be a good indication that there is some butter fat there, but it is not always a sure indication. Now, for instance, the Guernsey cream is more highly colored than that of the Jersey, yet the Jersey has the richer skin, but has not, consequently, the richer cream. A better way, I have found, is to turn back the ears and if they are oily, and to look again at the shoulder, and again at the end of the tail, and if you find there an oily substance the milk will be pretty sure to be rich in butter fat.

The Chairman—Do you consider the Ayrshire a good dairy cow?

Mr. Van Alstyne—Yes; I do. When a man wants a cream of 4½ per cent or a little better, present, I believe that the Ayrshire is better for that purpose than any other, but it seems to me that she is not as highly appreciated as she should be. I suppose the reason for that is that she has been a good cow and they have been satisfied to keep her and not attempt to put her to the front.

Mr. Herr—Is it not one objection to the Ayrshire that her teats are very slender, making her hard to milk?

Mr. Van Alstyne—Well, yes; the Ayrshire in Scotland is milked by the women, and time is not valued, so that the teats are very slender, but in the last ten years her teats have been very much improved.

Mr. Snavely—Is not the Ayrshire coming to the front during the last few years?

Mr. Van Alstyne—I want to say this; and I don't want anyone to think that I am opposed to the Holstein, because I think the Holstein is the best cow in the country today, but I have seen a good many indications in our country, where they make cheese to a large extent, that would seem to show that the Holstein is taking second place. I should be sorry to see it, but just as sure as he sun rises tomorrow morning, in a few years you will see the Ayrshire displacing the Holstein in our country.

Mr. Chubbuck—How about the Brown Swiss? She is a good cow, and some of my friends here are perhaps aware of it; she gives as much milk as the Holstein, and nearly as rich as the Jersey, and has a heavy carcass. I don't believe in going abroad when you have your choice of the best at home.

TESTING CATTLE WITH TUBERCULIN.

Breeders' Gazette.

Any intelligent person can test cattle with tuberculin after receiving the necessary instructions, but it requires a considerable degree of skill and some experience properly to determine the presence or absence of the disease. If you cannot command the services of a graduate veterinarian to do the work you should not hesitate to do it yourself, and to that end the following instructions will be found useful:

In the first place, the quality of the tuberculin to be used is all-important, and there is much distressing evidence to show that commercial tuberculin is not always reliable, but frequently fails to detect the presence of the disease, and owing to this cause the disease has for years spread gradually in many a fine herd, whereas by use of government tuberculin its presence might have been instantly detected and the plague promptly stamped out.

The tuberculin should be fresh as well as reliable, and then should be used intelligently. If old it may be inert or weak and so prove useless as a detecting agent; if used unintelligently it may fail to detect the disease or apparently detect it when really absent.

Tuberculin acts by causing a marked, gradual increase in the temperature of the tuberculous cow tested, and after attaining the maximum the temperature as gradually falls. A very sudden rise and a fall that is sudden, each within a short period of time, scarcely can be considered perfectly indicative of tuberculosis. Before accepting such spasmodic increases as indicative of the disease all circumstances and conditions affecting the animal at the time should be carefully taken into account, and it is in this phase of the work that experience and special skill are most required.

For the work of testing one requires, in addition to the supply of reliable tuberculin, a strong clinical thermometer, several short, sharp hollow needles of comparatively large calibre and a strong graduated hypodermic syringe. All of these may be purchased from any dealer in veterinary instruments.

Before commencing the test the cows should be accustomed to the stable, if they have been running out of doors, and should have quited down and become accustomed to their new quarters if shipped in from a distance. It is best not to test cattle in hot weather, as their temperature is very easily affected by heat and indeed by all marked extraneous, internal and incidental influences such as change of food, fright, drinking of cold water, change of milkers, coming in heat, nearing calving time or effects of calving or retention of afterbirth. It is well, therefore, not to test a cow that is in any way sick, in heat, nearing calving, just calved, retaining her afterbirth, affected with garget or greatly excited and, therefore, showing an abnormally high temperature from any cause or one of those mentioned.

When all is in readines for the test preliminary temperatures of each cow should be taken by inserting the thermometer in the rectum for not less than five minutes. The mercury in the thermometer is first to be shaken down to 100 Fahr. and on removal the column is to be carefully read and the reading set down on a card or paper opposite the cow's name. The first temperature is to be taken before 8 o'clock a. m., the second at noon and the third at 6 p. m. or thereabouts, and these three temperatures show the average normal temperature of the cow before injection of the tuberculin. No cow that shows a temperature of

103 Fahr. should be tested with tuberculin, as this temperature may be considered indicative of some disturbed condition of the body which will interfere with testing and possibly lead to wrong deductions from the test. Having set down the three preliminary temperature readings to determine the normal temperature before testing, the tuberculin is to be injected at 9 or 10 p. m. of the same day.

The customary dose of tuberculin is two cubic centimeters, or half a cubic centimeter for each 500 pounds of live weight. It is well to increase the dose for heavy cattle in the ratio indicated, a ton bull taking four cubic centimeters but no animal (adult) taking less than two cubic centimeters. It also is a good plan to give all suspicious appearing animals an extra large dose, as it is a well proved fact that the more infection from tuberculosis there is in an animal the less may be the reaction or rise in temperature following the use of tuberculin. Indeed an animal may be so thoroughly impregnated with the bacilli of the disease that tuberculin has no effect, but in all such cases the experienced veterinarian should be able confidently to determine the presence of the disease by physical examination.

The method of injection is simply to insert the hollow needle in the thin skin of the animal's neck or back of the shoulder; then, making sure that the point of the needle is free from the tissues underlying the skin, slowly inject the tuberculin. The needle, syringe and skin should be perfectly cleansed before operating.

Next day, commencing at 6 o'clock, the temperature of each cow should be taken every two hours and set down on the chart opposite the preliminary temperatures of the previous day. The cows need not be fed or watered until all of the necessary temperatures have been taken, but they should have been fully fed and watered just before or after the injection of tuberculin the night before, and some practitioners believe in allowing a little feed and a swallow or two of water after taking the first morning temperature. The cows are to be kept in the stable until the test is complete.

If a cow's temperature the next morning after injecting tuberculin is found to have risen one and one-half degrees above the normal temperature of the previous day, to have stayed up for some time and then gradually declined to the normal temperature, she is to be considered "suspicious" and should be held for a retest in three months.

If a cow's temperature rises two or more degrees above normal in the same manner as that just indicated she is to be considered tuberculous and dealt with accordingly, but unless she is physically affected or has tubercular hardening of the udder she should be isolated and tested again in three months. Only those animals which react decidedly and at the same time are quite evidently diseased should be slaughtered or shipped to the city for slaughter under government inspection, but all reacting cattle should be kept separate from the well cattle and their milk should not be used for man, beast or poultry.

Reliable tuberculin affords us a safe and fairly certain means of detecting the presence of the disease and there is already considerable data to prove that the new method of inocculating against tuberculosis as proposed by VonBehring is a success.

BUILDINGS, SHEDS AND YARDS FOR POULTRY.

By W. J. Kennedy, Ames, Iowa, in Iowa State Register and Farmer.

Poultry, like other classes of live stock on the farm, requires suitable protection if we are to look for the greatest gains from our flock. The many different forms of houses—to suit the fancier, specialist and farmer where only a few fowls comparatively are kept—though differing somewhat in size, design, materials used, convenience and cost, must be in the main constructed upon the same general principles if the greatest success in the end is attained. Successful results have been achieved in so many different kinds of houses that it would be impossible in this article to describe them, so we shall content ourselves with the outline of a few of the principles that prevail in all well-managed poultry houses.

In the first place, all are agreed that a poultry house should stand on high, dry ground—preferably a gravelly or sandy knoll, as such locations easily drain themselves. If such are not to be had, then the scraper should be used to make a slightly elevated spot on which to build. If advantage can be taken of a windbreak or a location behind other buildings, so as to protect it from the cold north and west winds, all the better.

Successful poultry raising so far as housing is concerned makes the following demands: That there be furnished a large amount of room, light, warmth, pure air, dryness, freedom from draughts, roosts, nests, comfort and cleanliness. The sheds, if such are provided, and the yards should furnish ample space for exercise.

Room.—Fowls should not be crowded nor is it wise to keep them in very large flocks—much success has been achieved where only 15 to 25 hens were kept in a bunch while success has attended also the bunching of from 60 to 70. It is safer to deal in the smaller numbers, as one is less apt to experience the losses that sometimes result from housing in the larger flocks. If but one room is provided, each fowl should have from 10 to 15 square feet of floor space. If roosting and scratching pens are in separate apartments each fowl should have 5 to 6 square feet of floor space in the roosting pen and 10 to 12 in the scratching pen. Provide a roosting space of 7 to 8 inches for the smaller Mediterranean fowls, such as the Leghorns, 8 to 10 for Rocks and Wyandottes, and 10 to 12 for the larger Asiatic breeds—the Brahmas and Cochins. In the yard in summer from 100 to 150 square feet of grass should be allotted each fowl.

Light.—Sunlight purifies the floors, roosts and drop boards and helps to keep the fowls in a vigorous, healthy condition. In order to make provision for a large admission of sunlight at least one-third of the south and east sides should be glass. The windows, if placed high up, will allow the winter sun to do its most effective work in shining into the remotest corners of the house. In some cases windows are placed in the roof of the scratching pens.

Warmth.—The roosting apartment must be warm and comfortable for the fowls while at rest. In order to make the roosting apartment warm a small part may be curtained off from the rest of the house so that the heat from the fowls' bodies will warm it sufficiently. The scratching or exercising part should be light and cool, but free from draughts.

Pure Air.—Ventilation must be secured, as fowls cannot remain in a healthy condition in foul, damp, stagnant air. But in securing change of air we must be careful to prevent draughts, especially in those apartments where the fowls roost.

Roosts.—Roosts should be made of 2x3's. They should be planed off smooth, rounded slightly on the upper corners and should be free from splits or cracks, as vermin lodge in these crevices and are hard to dislodge. The roosts should be placed low—not more than 3 feet from the floor—and should be at least 18 to 20 inches from the wall. If more than one roost is used, all should be on a level, for if you put one higher than another the fowls will crowd for the higher roost. Low roosts are easier to mount and to fly from. A drop board should be placed under the roosts 20 inches in width for single roosts and 36 inches for two roosts. This must be made of planed inch lumber, so that it can be easily cleaned at least twice a week.

The nests can be placed under the drop board. They must be 15 inches wide and 18 inches deep. Hens like to steal away in a quiet place to lay, so it is best to leave the opening on the side next to the wall. A little drop door may be arranged on the back from which to gather the eggs.

Roosts, nests and drop boards should be so arranged that all can be taken out easily should you wish to give the quarters a thorough cleaning. The inside must be whitewashed now and again. This will add to the appearance as well as imprison vermin that may be lurking about in the crevices.

A ground floor serves a good purpose. Raise it 4 to 5 inches above the ground outside. Put in 3 inches of coal ashes or gravel and fill in the remainder with sand, or make it entirely of sand. In August the upper 2 inches of sand may be removed and the space filled in again with fresh material. Let this be done early, so that the floor may be well dried out before the poultry have to be inclosed. The sand floor should then be covered with chaffed clover hay, alfalfa or straw, which must be frequently renewed. As has been already mentioned, the drop board and roosts should be put in so that they may be easily taken out for cleaning and a sun bath.

The partitions ought to be made of matched lumber to about 4 feet in height, and the remainder of wire netting. Each partition should have a door large enough for a person to walk through. Down at the bottom of the wall, leading from the pen to the yard or scratching pen, there should be a small opening, 10x12 inches, through which the hens may pass in and out.

A cheap, convenient, suitable house for the ordinary farm is made somewhat as follows: It is made in the form of a lean-to 16 feet long, 10 feet wide, 8 feet high at front and 4 at rear. The frame is made of 2x8 scantling. It is single-boarded and battened all around except in the little roosting compartment farthest from the door. This part is made warm by means of paper and matched lumber on the outside, and in front of the roosts there is hung a canvas drop curtain which in severe weather may be lowered to keep in the heat generated by the fowls themselves. A door is left in the corner, and this doorway has hung over it a piece of sacking or something of that nature. In the upper front is a large window for the admission of light. A pen of this kind has given excellent satisfaction for the production of winter eggs, the hens continuing to lay except in the severest snap.

Large yards are necessary for the poultry to run in during the summer months, if they must be confined. Let the yard be at least 50 feet long by 30 feet wide. If there are trees in this yard, all the better, as they will provide the shade that is required during the hot weather. The yard may be fenced with wire netting 6 feet high for the larger fowls, while at least a 7 or 8-foot fence will be required for the lighter breeds. The yard should be well grassed, clean and supplied with pure water for drinking purposes.

FEED STUFFS SUITABLE FOR POULTRY.

By W. J. Kennedy, Ames, Iowa, in Iowa State Register and Farmer.

"Out of nothing nothing can come," is a maxim which has long since been recognized as a basic fact. Perhaps in the feeding of no other class of live stock is this so true as in the case of the poultry flock. No person can successfully feed a flock of poultry, whether for meat or egg production, unless he or she has a clear conception of what constituents are demanded of the fowl in the building up of the body work or in the production of the egg. This must first be ascertained, and then the rations should be made up of those feeding stuffs which will supply the necessary compounds at the very lowest possible cost. It might also be added that concentrated feeding stuffs are very necessary, as fowls are not capable of assimilating those feeding stuffs which are of a bulky nature.

A study of the composition of the body and feathers of a fowl shows clearly that they consist of water, ash, protein and fat. Thus it is clear that the rations fed must contain the compounds that will supply these. Almost one-half of the dry matter in the body of the fowl is protein, and about 8 per cent is ash. Investigations made by Jeneter at the New York experiment station show that the body of a Leghorn hen—body, blood, bones, feathers and viscera—contains 55.8 per cent water, 21.6 per cent protein, 3.8 per cent ash and 17 per cent fat. The composition of a fresh egg shows it to be made up of shell, 11.4 per cent; water, 65.7 per cent; fat, 8.9 per cent; protein, between 11 and 13 per cent. Of the total dry matter in an egg, including the shell, there is 35.6 per cent ash, 25.9 per cent fat and from 33 to 38 per cent protein.

A study of the above analyses will show clearly the importance of supplying a liberal allowance of both protein and ash matter in the rations of poultry. While a considerable amount of fat is contained in the body composition, this is amply supplied in the ordinary grains which are to be had on any farm, all of which contain an abundance of carbohydrates and fat—the source from which body fat is supplied. With the protein and ash matter this is not the case, as the ordinary grains, as a rule, are seriously lacking in these compounds. This being true, the poultry feeder must make up this deficiency from some other source which will supply the same in a palatable and concentrated form at a minimum cost.

A great variety of feeding stuffs may be used to good advantage at the different seasons of the year. So far as possible those grown on the farm or those which can be had at any of the feed stores should constitute the major portion of the ration. These should be supplemented by the use of concentrated feeding stuffs which contain a high percentage of both protein and ash matter.

Animal Feeds.—The by-products of the packing houses furnish by all odds the most valuable and economical source from which to secure the necessary protein and a large amount of the ash matter. These consist of highly nitrogenous feeding stuffs, made from meat scraps, dried blood and dried fish. Blood meal, for instance, is a concentrated food, containing a large percentage of protein. The method of preparing the same is so complete that it is absolutely free from any source of infection. When fed in mashes it gives excellent results in the feeding of growing chickens and laying hens. This is especially true when fed in conjunction with corn meal and the other common farm grains. Meat meal may also be used to good advantage in the feeding of the hen flock for egg production, but is not so good as the blood meal for chickens, due to the fact that it is composed of more bulky material.

Bone Meal.—Bone meal made from the steamed bones is also much relished and serves an excellent purpose in supplying ash matter. Raw bones, when ground up fine, make a very desirable food. Some form of bone meal should always be supplied to the hen flock.

Lime.—A large amount of lime is utilized by laying hens in the manufacture of shells. This can be furnished them during the summer or winter, if confined, by giving them finely powdered oyster shells, lime, previously dried egg shells, or beef bone, finely ground. The egg-eating habit is oftentimes forced upon hens by our failing to furnish them with the necessary elements for the structure of the shell.

Milk.—Both sour skim milk and buttermilk are excellent feeds for fattening poultry or for laying hens. Whenever obtainable they should be fed, as no other feeding stuff has ever been found that will satisfactorily take the place of these feeds.

Vegetable Food.—In compounding a ration for fowls, vegetable foods, such as cabbage, turnips, mangels, carrots, clover and alfalfa, serve an exceedingly valuable purpose in supplying the bulk and succulence. They also may be used to good advantage in inducing regular and abundant exercise. For instance, a cabbage may be suspended from the ceiling so that it will hang above the floor within reaching distance of the fowls. In this way they are induced to take exercise. Turnips and other roots may be suspended in a like manner, or they may be fastened on a nail on the wall. Clover and alfalfa make a valuable litter and also furnish some food in the leaves, which are greedily eaten by the hens during the winter season.

Grains.—A wide range of grains may be used to good advantage in the feeding of the poultry flock. The kinds to use are those which are most easily and cheaply obtained. For the laying hen wheat is the food par excellence. From the standpoint of fattening corn is a most excellent food. It should always be fed in the cracked or ground state. The ground corn can be fed to best advantage in mashes with other grains, while cracked corn gives best results, especially when fed to laying hens, when it is scattered in the litter, as the hens must scratch for the same, thus securing exercise. Buckwheat partakes somewhat of the nature of corn and is a good fattening food. In order to accustom hens to it it is well to boil it the first two or three times. After that they will usually take to it readily.

Bran and shorts both serve an excellent purpose in a poultry ration, in that besides furnishing growing material they tend to keep the digestive system in a good, healthy condition.

Oats with the hulls on are somewhat bulky, and on this account are not so desirable, but when hulled the oat grain for growing or fattening poultry gives excellent results. It causes a development of firm flesh which is so desirable in all poultry markets.

Barley, on account of its coarse hulls, is better to be ground and fed in mashes with other grains. It, too, is somewhat of a fattening food, thus should not be used extensively in the feeding of the laying flock. Cooked barley, fed occasionally during the winter season, gives good results.

Peas are used extensively in the fattening of poultry. For laying purposes they are not very desirable. For fattening purposes cooked pea meal has few equals.

There are many seeds, too, around the farm that can be used to good advantage in the feeding of poultry. It should always be kept in mind that variety in the rations is the secret of much of the success in poultry feeding.

Grit.—As a hen has no teeth, her food is masticated in what we call the gizzard. This is a strong muscular sack with a strong membraneous lining. This sack contains numerous small, sharp, hard stones, which serve to crush and grind up the food that must pass through it. When hens are confined they should be furnished with gravel or some other substance from which they can secure the necessary "grit" with which to grind food.

Pure fresh water should be supplied in abundance at all times.

In conclusion, the writer must again urge the importance of supplying plenty of protein and ash compounds.

CARE OF THE CHICKS.

J. F. Schureman, Editor Comercial Poultry.

It would almost seem that at this day and age it would be superfluous to try to advance any new thoughts, methods or theories in regard to the proper care of the young chicks. It would seem that after the years of careful investigation and thought that have been given the subject it would be thoroughly mastered and that there would be no need for further investigation or discussion. But such is not the case, by any means. In fact there is not today a subject pertaining to poultry culture that needs more thorough, painstaking investigation and discussion than this one—"The Care of the Chicks."

The above statement is substantiated by the fact that not more than 50 per cent of the chicks that are hatched the country over ever reach maturity or even marketable age. In fact we believe it safe to say that nearly 50 per cent of the chicks hatched each year die before they are four weeks old. If this is true—and we believe it is—it seems to us no further argument is needed to prove that the careful investigation of this subject is of the utmost importance.

It is a comparatively easy matter to hatch almost any number of chicks, but an entirely different matter to raise the larger per cent of them to maturity. There are almost numberless causes for the great mortality among the chicks each season, among which may be mentioned lack of inherited vitality, improper feeding, bowel trouble, lice, exposure, white diarrhoea, etc., and occasionally the little fellows die off from causes that are not explainable.

In a majority of cases the trouble is due to either carelessness or ignorance on the part of the caretaker, and the lives of the chicks are simply sacrificed, while in other cases they die in spite of the fact that they receive the very best of care and attention. Even those who have made a scientific study of the matter covering a period of years tell us that ocasionally their chicks die from causes that are inexplainable.

How many of our readers can tell us the cause of white diarrhoea in little chicks? We venture to say that not one poultryman in a thousand can tell with any degree of certainty what causes it, though there are hundreds who will make a guess at it. Numerous theories have been advanced, and numerous remedies recommended, but we have yet to hear of a sure cure for the disease when once it gets a foothold in a flock of chicks.

Prof. James E. Rice, of Cornell University, has for several years been making a careful study of the cause and cure—or prevention—of the numerous diseases that cause the death of hundreds of thousands of chicks yearly, and his investigations have led him to believe that one great cause of mortality is the failure on the part of the digestive organs of the chicks to properly digest the yolk of the egg remaining in their bodies at the time of hatching. Mr. Rice says:

"If we can solve this one problem—the cause of the anaemic condition of chicks that follows this failure to absorb the yolk of the egg—more money will be saved in one year to the farmers and poultry raisers of New York state than it costs to run the State Agricultural College for ten years."

Mr. Rice says he is confident that environment has little, if anything, to do with the disease, as has been generally supposed. When he first began his investigations this theory was worked upon and followed up, but as the investigation progressed it was found that the same conditions existed under almost any and all circumstances—in dry places, in damp places, in light brooding houses and in dark brooding houses; in fact he found no conditions under which this trouble did not exist. Mr. Rice is confident, however, that the investigations being conducted will ultimately solve the problem.

While there are some causes of mortality among the chicks that baffle even the experts, there are other causes that are easily overcome if a little care and common sense will be exercised. For instance, there is no good reason why chicks should be lacking in inherited vitality, if the ancestral stock has been properly bred and nourished; but some people are foolish enough to imagine that they can get strong chicks from weak, emaciated, anaemic, inbred stock, and are surprised when they get only half a hatch (or less) of puny, weak, undersized chicks with barely enough life and strength to get clear of the shell. Within twenty-four hours they begin to die off, and it's dollars to doughnuts that not one of them will be alive a fortnight after hatching. It takes good, rich, red blood in the parent stock to produce strong offspring, and without this inheritance the chicks are bound to be weaklings, totally unfit to successfully wage the battle for existence and growth and development.

When it comes to the proper feeding of chicks there is no need for anyone remaining ignorant on this subject, as it has practically been reduced to a science and the poultry papers are full of it. Not all writers agree in every detail, but the methods employed by the successful, up-to-date poultry men and women are essentially the same. The dry feeding method is the proper one today—and the successful one—although occasionally we find those who still stick to the old methods of our grandmothers and feed mushes and mashes and other soft food.

Something like a year ago we wrote an editorial on "Getting Back to Nature," in which we advocated the rearing of the chicks along lines and under conditions similar to those surrounding the young of the wild birds of the prairie and forest. We said then—and still believe—that we coddle and pamper the chicks altogether too much. Our very treatment of them ofttimes has a tendency to make them delicate and proves a handicap rather than a help to the little fellows. The newly hatched chicks of the prairie hen, the grouse, the quail, etc., have no soft mashes prepared for them, but pick up dry seeds, bugs, worms, tender grass shoots, etc., and they live and thrive and mature into strong, healthy, vigorous birds. We can imitate Nature's way of feeding by giving our chicks foods similar to the above, instead of wet mashes, corn meal mush, etc., which often becomes sour and unwholesome before it is eaten up, and more often sours in the crops of the little fellows, causing all kinds of trouble.

It must be borne in mind that the baby chicks are delicate little things, at best, and that they need not only warmth and protection, but foods that are best suited to their needs and somewhat limited powers of digestion and assimilation during the first few days of their existence.

Appreciating the importance of this subject and the value of a free and full discussion of the same, the publishers of Commercial Poultry have arranged with successful poultry men and women in every part of the country to furnish us articles for publication, and the first installment appears in this number as a symposium on "Care of the Chicks." It consists of articles from nine different states, viz.: Maine, Massachusetts, Virginia, Tennessee, Texas, Indiana, Ohio, Nebraska and Washington. In our April and May numbers articles on the same subject will appear from poultry men and women in other states, so that the entire country will be covered. The writers of these articles are practical and successful poultry raisers, and not theorists. This series of articles will be worth ten times a year's subscription to Commercial Poultry, but nothing is too good for our readers.

COST OF FILLING SILOS.

U. S. Department of Agriculture, Farmers' Bulletin No. 292, by Lyman Corrier.

The data contained in the following pages were gathered in the months of September of 1905 and 1906. The writer visited all of the thirty-one farms mentioned in this paper and took notes on the number and arrangement of men and teams, the machinery used and the length of time taken, and he also made measurements of the silos, etc. Information in regard to the quantities of twine and fuel used and the number of acres cut was given by each individual farmer.

It was thought advisable to confine this inquiry to localities in which the silo has been in use for several years. The places chosen were in Jefferson and Fond du Lac counties, Wisconsin, and in Branch and Lewanee counties, Michigan.

METHODS EMPLOYED.

The methods employed by the different farmers in filling their silos varied greatly, no two being exactly alike. This was occasioned largely by scarcity of help or teams and by the kind of machinery used. With a few exceptions the different methods may be classified in three groups:

(1) The most common practice was to have one man with three horses on a corn harvester cutting corn in the field; two men to load the wagons in the field; three or four men with teams, depending on the distance from the field to the silo, to haul the corn to the cutter; one man to run the engine when steam was used for power, and, occasionally, when gasoline engines were used, one man to feed the cutter and one man in the silo to spread and tramp the silage. Each teamster pitched off his own load. This makes a crew of eight or nine men, exclusive of the man who tends the engine.

(2) In cases where there is a shortage of teams the following method is generally practiced. One man, with three horses, cuts the corn; two men load the wagons in the field; two men, or boys, with teams, haul the corn to the cutter; one man unloads the wagons; one man feeds and one man works in the silo. As soon as a load arrives at the cutter the teamster changes his team for an empty wagon and goes back to the field after another load. When a wagon is unloaded it is run out of the way by hand. With this method boys who are not strong enough to handle the green corn can be utilized to drive the teams. This method requires a crew of six men and two boys, exclusive of the engine tender.

(3) When enough horses are available and help is scarce, the following arrangement of men and teams is a good one. One man, with three

horses, runs the harvester in the field; four men with teams haul the corn to the silo; one man feeds and one spreads the corn in the silo. Low trucks or wagons with racks suspended below the axles should be used, so that the teamsters can put on their own loads. This requires a crew of seven men, besides the engineer.

Table 1 gives a comparison of these three methods.

TABLE 1.—NUMBER AND ARRANGEMENT OF MEN EMPLOYED IN FILLING SILOS BY VARIOUS METHODS.

Kind of Work	Method 1	Method 2	Method 3
Operating binder	1	1	1
Loading wagons	2	2	0
Driving teams	3 or 4	2 (boys)	4
Unloading wagons	Teamsters	1	Teamsters
Feeding cutter	1	1	1
In silo	1	1	1
Total number of men	8 or 9	8	7
Number of teams hauling	3 or 4	2	4

The difference between methods is in the arrangement for loading, hauling and unloading. When there is a sufficient number of teams the teamsters do their own loading and unloading. When teams are scarce two loaders and one unloader are needed; but boys may drive the teams to and from the field.

In figuring out the cost of filling the silos were measured and the amounts of silage determined from King's tables. It must be borne in mind that these weights are for cured silage. The actual weights of green corn put in the silos would be from 15 to 25 per cent greater than those mentioned.

The cost of labor varied considerably. In order to compare the different methods a uniform rate of 15 cents an hour was made for men and the same for a team of two horses. Engine hire was rated at $4.50 a day, which includes the engineer. This may be too high in the case of gasoline engines, as they did not require attention all of the time; yet they caused more delays from getting out of order than did the steam engines, which probably offset the difference in attention demanded.

Twine was rated at 11 1-2 cents a pound, coal at $5 a ton and gasoline at 13 cents a gallon. No charge was made for wear and tear on machinery or for boarding the help. Nearly every one of these men owned his silage cutter. The others depended on hiring cutters. The charge for an engine, engineer, silage cutter and one man to feed is usually $10 a day.

Ten hours were considered a day's work. No deductions were made for delays unless the helpers were set at some other work. The average quantity of silage cut daily by each man was computed by dividing the number of tons of silage cut by the total hours worked and multiplying the result by ten.

TABLE 2.—ITEMIZED STATEMENT OF THE EQUIPMENT, ETC., USED IN FILLING SILOS ON THIRTY-ONE FARMS, WITH COST PER TON OF SILAGE. (ARRANGED IN ORDER OF TOTAL COST.)

No. of farm	Length of haul.	Silage Cut			Area cut	Yield per acre	Number of days cutting	Kind of engine	Size of engine	Kind of fuel	Length of cylinder	Length of cut	Kind of elevator	Cost Per Ton of Silage.					
		Total quantity	Daily quantity	Daily quantity per man										Labor	Teams	Twine	Fuel	Engine hire	Total
	Rods	Tons	Tons	Tons	Acres	Tons			H. P.		In.	In.							
1	60	285	57	6.95	22	12.94	5	Gasol	15	Gasol	15	¾	Blower	$0.21	$0.12	$0.03	$0.02	$0.08	$0.46
2	10	43	43	6.14	4	10.75	1	Gasol	10	Gasol	13	¾	Blower	.23	.07	.03	.03	.12	.48
3	30	103	68.7	6.88	14	7.4	1.5	Steam	16	Coal	17	¾	Blower	.22	.12	.05	.03	.07	.49
4	50	90	60	7.15	14	6.4	1.5	Steam	12	Coal	15	¾	Blower	.21	.13	.05	.04	.08	.51
5	40	212	44	6.83	20	12.1	5.5	Steam	12	Coal	15	¾	Blower	.22	.13	.03	.03	.10	.51
6	80	169	48.4	6.05	15	11.3	3.5	Steam	10	Wood	18	½	Carrier	.25	.12	.03	.02	.09	.51
7	30	140	61	7.42	16	8.75	2.3	Steam	10	Coal	18	¾	Carrier	.20	.17	.03	.05	.08	.53
8	30	180	48	6.48	20	9	3.75	Steam	12	Coal	13	1	Carrier	.23	.16	.05	.02	.09	.55
9	30	103	37.5	6.15	12	8.6	2.75	Steam	12	Coal	16	½	Carrier	.25	.14	.03	.02	.12	.56
10	20	130	52	5.2	8	16.3	2.5	Gasol	10	Gasol	13	¾	Blower	.29	.13	.02	.02	.10	.56
11	80	630	47.8	5.68	57	12.5	13.2	Gasol	12	Gasol	20	¼	Carrier	.26	.15	.03	.03	.09	.56
12	40	205	34.2	6.51	21	9.8	6	Steam	10	Coal	18	½	Carrier	.24	.14	.04	.04	.13	.59
13	240	123	61.5	5.6	20	6.1	2	Steam	12	Coal	15	¾	Blower	.27	.18	.05	.03	.07	.60
14	60	135	54	5.4	16	8.5	2.5	Steam	10	Coal	20	½	Carrier	.28	.16	.05	.03	.08	.60
15	30	325	46.5	5.33	19	17.1	7	Steam	12	Coal	15	¾	Blower	.28	.14	.04	.06	.10	.62
16	120	810	57.8	4.45	85	9.6	14	Steam	12	Coal	20	¾	Carrier	.34	.16	.00	.05	.08	.63
17	80	123	49.3	5.37	18	6.4	2.5	Steam	10	Coal	20	½	Carrier	.28	.17	.07	.03	.09	.64
18	30	450	42.8	4.13	33	13.6	10.5	Steam	12	Coal	22	¾	Carrier	.36	.13	.04	.03	.11	.67
19	80	130	47.3	4.58	20	6.5	2.75	Steam	20	Coal	15	¾	Blower	.33	.14	.04	.07	.09	.67
20	50	177	28.5	5.9	20	8.9	6	Gasol	15	Gasol	15	¾	Blower	.25	.20	.05	.03	.15	.68
21	100	90	32.7	4.5	10	9	2.75	Gasol	10	Gasol	10	½	Carrier	.33	.16	.04	.03	.14	.70
22	120	640	42.7	4.25	85	7.5	15	Steam	12	Coal	15	¾	Blower	.35	.18	.03	.03	.11	.70
23	30	148	33	4.49	18	8.2	4.5	Gasol	8	Gasol	18	½	Carrier	.33	.16	.05	.03	.14	.71
24	80	130	25	4.65	15	8.7	5	Steam	10	Coal	15	½	Carrier	.28	.20	.04	.03	.17	.72
25	320	68	34	3.43	7	9.7	2	Gasol	10	Gasol	15	¾	Blower	.44	.16	.00	.02	.13	.75
26	45	114	41.5	4.08	13.5	8.5	2.75	Steam	12	Coal	20	½	Carrier	.36	.20	.07	.03	.11	.77
27	80	350	35	4.38	30	11.6	10	Gasol	15	Gasol	16	1	Carrier	.34	.22	.05	.04	.13	.78
28	160	70	46.7	3.59	9	7.8	1.5	Steam	10	Wood	13	¾	Blower	.42	.18	.04	.06	.10	.80
29	40	135	30	3.91	20	6.8	4.5	Steam	10	Coal	18	½	Carrier	.38	.18	.06	.05	.15	.82
30	60	195	30	3.75	25	7.8	6.5	Gasol	11	Gasol	16	¾	Carrier	.40	.21	.05	.03	.15	.84
31	60	60	40	3.33	11	5.6	1.5	Steam	10	Coal	17	¾	Carrier	.45	.20	.04	.05	.12	.86

The average yield of silage per acre was 9.01 tons. The average cost per ton of silage was 64 cents. The average amount of silage cut daily per man was 4.9 tons. The average cost per acre for putting the corn in the silo was $5.98.

ARRANGEMENT OF LABOR.

The following table shows the distribution of the men employed in cutting, loading, hauling, feeding, etc.:

TABLE 3.—ARRANGEMENT OF LABOR IN FILLING SILOS ON THIRTY-ONE FARMS.

No. of farm	Cuting Corn		Leaders	Hauling—men and teams	Pitching Off	Feeders	In silo	Engineers	Total number of men	Remarks
	Men	Horses								
1	1	3	2	3	Teamsters.	1	0	0	7	
2	1	2	1	1	2	1	1	1	8	
3	1	3	2	4	1	1	1	1	11	Teamsters helped unload.
4	1	3	2	4	Teamsters.	1	1	1	10	
5	1	3	2	3	Teamsters.	1	1	1	9	
6	1	3	2	3	Teamsters.	1	1	1	9	
7	1	4	0	4	Teamsters.	1	1	1	8	Changed teams on binder every hour.
8	1	3	1	3	Teamsters.	1	1	1	8	
9	1	3	2	3	Teamsters.	1	1	1	9	
10	1	3	2	3	Teamsters.	*2	2	1	11	
11	1	3	3	3	Teamsters.	1	0	0	8	Had man in silo last two days
12	1	3	2	2	1	1	1	0	8	One boy drove team.
13	1	3	3	6	Teamsters.	1	1	1	13	
14	1	3	2	4	Teamsters.	1	1	1	10	
15	1	3	3	3	Teamsters.	1	1	1	10	
16	1	2	3	5	Teamsters.	*2	2	1	14	Did not use any twine.
17	1	3	3	4	Teamsters.	0	2	1	11	Engineer helped feed the cutter.
18	1	3	2	2	1	1	1	1	9	Two men in silo last two days
19	1	3	3	3	Teamsters.	*2	2	1	12	
20	1	3	0	3	1	0	1	0	6	
21	1	3	3	2	Teamsters.	*2	0	0	8	
22	1	3	2	4	Teamsters.	1	2	1	11	
23	1	3	2	2	1	1	1	1	9	
24	1	3	2	2	1	1	1	0	8	One boy drove team.
25	3	3	2	4	Teamsters.	1	2	1	13	Binder failed; cut mostly by hand.
26	1	3	2	4	Teamsters.	1	2	1	11	One man in silo first day.
27	1	3	1	3	Teamsters.	1	1	1	8	
28	1	3	4	4	Teamsters.	*2	2	1	14	
29	1	3	2	2	1	1	1	1	9	
30	2	4	1	4	Teamsters.	1	1	1	10	Three teams hauling first 2½ days.
31	1	3	3	4	Teamsters.	*2	2	1	13	

*Cutter did not have self-feeding attachment.

The question at once arises, Why can some farmers fill their silos at a cost of 46 cents a ton while it costs others 86 cents? Quite often the higher cost is due to unavoidable causes, such as long hauls, lodged and tangled corn, and accidents to machinery. In many cases, however, a poor arrangement of the help is responsible for the extra expense. The best method is that in which the working force is the most evenly balanced; that is, where all are working continually. It is not necessary that men and teams should be rushed to their fullest extent in order to get the work done cheaply. Some of the most expensive work was conducted with the greatest furore and hurry. The scheme where all are working and no one is hindered by the others is the most economical. Too many men in the field for the number at the cutter, or vice versa, and too large a crew for the size of the silage cutter are common sources of loss. Two or three men and teams with loaded wagons waiting their turns to unload, a similar condition in the field where they are waiting to be loaded, or a delay owing to a lack of teams represents a decided loss of valuable time. The factor that controls the size of the crew is the capacity of the silage cutter.

At farm No. 28 too many men were employed (see Table 3). If there had been only two men instead of four pitching on in the field, three men instead of four with teams hauling, and one man instead of two in the silo, just as much silage could have been cut in the same length of time. The cutter was of medium size—too small for the number of men supposed to be at work. Deducting the wages of the four men and one team that were not needed would lower the cost of filling at this place from 80 cents to 64 cents a ton.

A small cutter may be used almost as economically as a large one, but most farmers wish to get the silo filling done as quickly as possible and so prefer the larger machines. There was only 2 cents per ton difference between the cost on farms 7 and 8, yet at No. 7 a new machine with an 18-inch cylinder was used, while at No. 8 a 13-inch cylinder machine that had been in service eighteen years was still in use.

SIZE OF LOADS.

There seems to be an inverse ratio between the size of loads hauled and the cost per ton for filling. It is unfortunate that a record of the total number of loads was not kept for each farm. The importance of this feature was not fully appreciated at the beginning of the study. The table below gives the average size of load of ten farms where such a record was kept. As before stated, the weights given are for cured silage and are not the weights of the green corn as it comes from the field.

TABLE 4.—RELATION OF SIZE OF LOADS TO TOTAL COST OF SILAGE.

Number of Farm	Size of Loads	Cost Per Ton of Silage	Number of Farm	Size of Loads	Cost Per Ton of Silage
	Tons.			Tons.	
1	1.37	$0.46	16	0.72	$0.63
2	1.54	.48	19	.76	.67
4	1.00	.51	26	.75	.77
10	1.16	.56	28	.90	.80
15	.94	.62	11	.77	.86

The extra large loads hauled at farm No. 2 kept the cost remarkably low. There was only one team with two wagons hauling. Had smaller loads been drawn, the help of the eight men employed could not have been utilized to good advantage. The men, teams and machinery at farm No. 14, where the cost was 60 cents, were almost identically the same as those at No. 26, where the cost was 77 cents. No record was kept of the total number of loads hauled at these two farms, but the loads at farm No. 26 were much smaller than those at No. 14, owing to a steep hill that had to be climbed to reach the cutter. It is difficult to explain in any other way the difference in cost of 17 cents a ton at these two farms.

CROPS USED.

At farm No. 22 a 20-acre field of alfalfa was ready to cut at silo-filling time. The owner tried the experiment of putting the green alfalfa in the silo, mixing it with corn. The alfalfa was cut with a mowing machine and raked into windrows with a 2-horse hayrake. One man with a team was set to hauling the alfalfa while three were hauling corn. It is not a difficult matter for one man to put on a load of this green stuff alone. The man who did this work would bring in five big loads a day, estimated at two tons each. The three men and teams hauling corn, with two loaders in the field, would draw from 35 to 40 loads in that time. The silo was an extra large one, over 38 feet in diameter, and so the two crops were quite evenly mixed.

Corn alone was used at all of the other farms. There is considerable difference of opinion as to the relative value of different varieties of corn for silage. Some farmers grow very large southern kinds that do not. mature grain in latitudes as far north as Michigan and Wisconsin. Others prefer the ordinary dent sorts which produce a large percentage of grain. The total amount of digestible matter per acre is about the same, whether it is a large ensilage corn or the ordinary field variety, the difference in bulk being mostly water. Some farmers combine the two by planting one part of some large southern variety and two parts of common field corn. This is said to make a very satisfactory silage.

CONDITION OF THE CROPS WHEN CUT.

A few years ago it was thought necessary to ensilage corn in an immature state in order to have it keep. This made a sour silage with a strong pungent odor. The consensus of opinion now favors letting the corn go until the grain is fully matured. In ordinary seasons there is a period, lasting but a few days, in which the corn ears are ripe and the leaves and stalks are green. This is the ideal time for putting it in the silo. If the corn is allowed to mature beyond this stage water should be added to the cut material at filling time to prevent "fire fanging" of the silage. The results of many chemical analyses show that the food materials in the corn plant increase very rapidly as the plant approaches maturity, and do not reach their maximum until it is fully ripe. Most feeders prefer the silage made from mature corn because it contains less acid and possesses a milder odor than it does when cut in a greener condition.

EQUIPMENT—HARVESTERS.

With the price of labor high and help difficult to obtain it becomes necessary to take advantage of all the labor-saving machinery possible. The corn binder has come to be almost indispensable at silo-filling time. Most of the farmers whose work is described herein own their own harvesters. The others were able to hire them.

The cost of cutting corn with a machine is about the same as when it is cut by hand and laid in small bunches on the ground. But there is a considerable saving of time in handling bundles rather than loose stalks. It takes fully twice as long to unload the same quantity of corn when loose as when in bundles. At farm No. 16 (Table 2) the corn was cut with a harvester, but no twine was used. It is evident that the increased cost of labor more than offset the saving of three or four cents per ton of silage for twine. Several inventors are trying to construct a corn harvester with an elevator attachment to load the corn as soon as cut on a wagon driven alongside. Some of these machines give promise of success.

WAGONS.

Until a loader has been perfected the style of wagon used in hauling needs careful consideration. The rack should be as low as possible. A low, solid-wheeled truck gives good satisfaction on smooth, level farms, with short hauls. The draft is too heavy for other conditions.

The rack that is quite commonly used in Wisconsin consists of two 4-by-6-inch bed pieces, 18 or 20 feet in length, bolted together at one end to form a V. On top of these timbers is built a rack 6 feet in width. The bottom of this rack is about 8 feet long. The end boards are 4 feet high, built flaring so they do not quite touch the wheels. The apex of the V is suspended below the front axle of an ordinary farm wagon by means of a long kingbolt. The other ends are attached below the hind axle by U-shaped clevises. This rack can be easily made. The materials needed in its construction are 80 board feet of 4-by-6-inch plank, 96 feet of boards 1 by 12 inches, 22 feet of lumber 2 by 4 inches, one long kingbolt, two stirrup rods and bolts and nails.

Hauling green corn is heavy, tiresome work, and too much attention cannot be paid to details of method in order to avoid unnecessary lifting. Before the advent of the corn harvester, when the corn was cut by hand and hauled unbound, it was a common practice to have the cutter set on a platform about 2½ feet above the ground. A man could pick up an armful of corn on the wagon and, stepping on the platform, place it on the feeding table. With the corn bound in bundles this arrangement causes much extra labor; nevertheless many farmers still keep the cutter upon the platform and lift the corn up to it when they could much more easily drop it on the table if the cutter were down on the ground.

SILAGE CUTTERS.

There are several first-class silage cutters on the market—machines that will cut the corn as fast as two men can pitch it on the table. The self-feeding table that is found on most of the modern cutters saves the labor of at least one man. This table should be long enough to hold two bundles of corn lapped at the bands.

ELEVATORS.

There are two types of elevators in general use. One is the old-style slat, or rattle carrier, and the other is the blower, in which the cut corn is forced up through a tube by means of a current of air. The chief objection to the blower machine is that it takes so much power to run it. While the blower requires more power to operate than does the slat carrier, very few blowers require more than a 12-horsepower engine. With but one exception the power used on any one of these 31 farms would have been sufficient to run a medium-sized blower machine, and in most cases would have handled the largest machines without any trouble. It is interesting to note that blower machines were used by the five men having the lowest cost per ton of silage. Where the carrier elevators were used it cost on an average 65 cents per ton to fill the silo, while it cost those who used the blower elevators 61 cents. A carrier unless covered on top and fitted with a return trough underneath is very untidy, especially during windy weather. At one place there was litter to the depth of half a foot about the silo that had blown out of the carrier. This trouble is avoided by the use of the blowers.

The blower pipe should stand as nearly perpendicular as possible. In one case that was called to the writer's attention a blower at first proved unsatisfactory. The trouble lay in having the cutter set too far from the silo, with the pipe leaning at an angle of 30 degrees from the perpendicular. The pipe clogged frequently, and a 12-horsepower engine was insufficient to handle the cutter when it was crowded to anything like its full capacity. After two days of annoyance and discouragement the owner changed the position of the machine, putting it close to the silo. The difference could be noticed at once. There was no further trouble from lack of power, and it was impossible to clog the pipe by overfeeding.

SILAGE DISTRIBUTERS.

In a silo more than 36 feet in depth it is not necessary to have a man to tramp the cut corn. If the surface is leveled two or three times a day while filling, the silage will pack sufficiently to keep. But there is one objection to doing this. If the cut corn is allowed to pile up in the form of a cone, the heavier parts will roll to the outside of the pile and the grain and leaves will not be evenly mixed.

Several devices have been invented for distributing the cut material in the silo, but few of them are successful. One of the most satisfactory distributers where a blower is used consists of two boards, 8 or 10 inches wide and about half as long as the diameter of the silo, nailed together at right angles to form a trough. A 12-inch board is nailed over one end of this trough, the other end being left open. For use, the trough is suspended from the roof with the open side downward and the closed end toward the center of the silo. The open end rests above the top of the blower pipe. As the cut material leaves the pipe it follows along this trough until it strikes the closed end; then it is scattered about the silo. If a little care is exercised in adjusting this device, it will give very good results.

PARTNERSHIP ARRANGEMENTS AMONG FARMERS.

The high cost of machinery for cutting silage and the difficulty in securing help prevent many farmers from building silos. It is highly important to be able to get an outfit when it is needed. An early frost or a spell of hot, dry weather may so affect the crop that it is necessary to fill the silo several days before the usual time. For this reason a man should own his cutter and engine, especially if enough silage is cut each year to warrant this outlay of capital. It is usually easier to hire an engine than it is a cutter. For this reason many buy the latter and depend on being able to rent the former when it is needed. The next best arrangement to owning an outfit individually is for two or three farmers in the same neighborhood to buy the necessary machinery in partnership.

The owners of farms Nos. 14, 17, and 26 bought a silage cutter together. At filling time each man furnishes two laborers and one team while the others are filling. By varying the seeding time in the spring they have been able to control the time of harvesting so that all three get their silos filled with corn in good condition.

THE SILO FOR IOWA FARMS.

Martin Rittenhour, Iowa State Register and Farmer.

I believe I voice the opinion of all when I say that in this day of advancement and with high-priced land we can ill afford to take a backward step. I wish to say a few words about silos and their importance to the Iowa farmer. It is a well known fact that we take to new things very slowly and we are all too slow in availing ourselves of such improvements over old methods that appear to be beneficial. In my opinion nothing can be of more real value to the modern farmer who owns his farm than the silo. It was some years before I could convince myself that the silo was the thing for me to build on my farm. I studied silos, made inquiries about them and finally I visited a farm where a farmer had had one for three or four years and in talking to him I became fully convinced that prosperity and a silo went hand in hand.

Deciding to build one I built a silo sixteen feet in diameter and thirty feet high, not including the foundation. For machinery to fill it I used a self-feed cutter with a 36-foot elevator run by a gasoline engine. With this machine we can cut and elevate from six to eight tons per hour. If I have to haul the corn very far I use four teams and five wagons, with one man in the field to help load and one in the silo to help pack the cut corn. After having had some experience I believe it a most excellent plan to keep the silage well tramped. It begins to ferment in two or three days. In filling I fill the silo as full as I can and then in a few days I fill it again after it has become settled. For teams, men and gasoline it costs me about $30 per day. It requires about one and one-half days to fill it at first and about a half day to complete it after it has settled.

My silo will hold about one hundred tons of silage and it costs me about $70 to put it up and care for that amount of first class feed. It requires from ten to twelve acres to fill the silo and the nearer the corn is to maturity the better the silage for feed. Moisture is necessary to preserve the silage and if the silo is filled in a dry time or when the corn is very ripe water will have to be supplied, which is most conveniently done by pumping it into the elevator as the cut corn is being elevated. A good time to fill a silo is of a damp day when it is too wet to thresh.

I regard the feeding qualities of silage the very best cheap feed we can provide. It has given me the best results when fed with a grain ration, but I have been fairly successful in feeding it alone. When my stock has plenty of it they care but very little for hay. I feed it to all kinds of stock, even the hogs seem to relish and enjoy a ration of silage.

With good silage I know we can produce beef at a profit, for it saves a good deal of heavy expense for so much valuable feed. I have not carried on any carefully conducted experiments with feeding silage, but judging by the condition of the stock it seems to fill the bill all right.

From tests made, it is safe to conclude that silage is a good feed as well as a cheap one, and is so easily available for immediate use that for stock raising it is of the best. With me a well-filled silo for winter the feed problem is solved and it is always ready and available. During the coldest of the winter the silage will freeze around the walls of the silo, but as soon as warmer weather prevails the silage will thaw out and drop down, and as far as I have been able to observe there is no difference in its feeding value. Stock seem to relish it either way.

The question for many to solve is, "Can I afford to build a silo?" Of course this depends on several things. A silo will not furnish the brains to fill it or to feed out the silage. I believe it is a mistake to plant the corn so thick that ears will be scarce. Without ears I regard silage very poor feed. When the corn has few ears or is immature the sugar turns to acid and does not make an ideal feed. One stalk with a good ear on it is worth four stalks without ears.

OATS.

VARIETIES, SEED, SMUT, SEED-BED, SEEDING.

From Bulletin No. 96, Experiment Station, Iowa State College of Agriculture and Mechanic Arts.

The past season had a most unfavorable influence upon the oat crop of the state. The scarcity of suitable seed oats is very forcibly brought to the attention when we consider that there is not enough of the 1907 crop of standard weight (32 lbs. per bu.) to sow the fields that will go into oats this spring.

The oats are extremely light, being from 30 to 50 per cent hull, and average from 16 to 25 pounds per bushel. There are comparatively few exceptions where they weigh more than the maximum given.

PERCENTAGE OF HULL IN OATS GROWN IN FAVORABLE AND UNFAVORABLE SEASONS.

Variety	Favorable 1906		Unfavorable 1907	
	Weight per bushel	Per cent hull	Weight per bushel	Per cent hull
Kherson	36	28	24½	34
Joanette	35	28	22½	35
Green Russian	32½	28	24	39
Early Champion	35	28	23½	40
White Russian	36	31	18	39
Irish Victor	33	32	19	41
National	38½	27	20	45
Myrick	31	35	19	39
Wisconsin No. 4	36	25	20½	49
Early Gotham	33	32	17	43
Silvermine	34	31	20½	45
Minnesota No. 6	35	28	16	50
Siberian	32	36	20	43
Dun	31	36	19	45
Tartar King	36	35	19½	49

The question confronting a very large number of Iowa farmers is, "What am I to do for seed oats this spring?"

It is to be noted that Iowa devotes on an average 4,144,463 acres annually to oats having an average yield of 29.5 bushels per acre, a total of 123,422,880 bushels worth $35,764,205.00.

*IOWA'S OAT CROP, 1903-1907.

Year	Acreage	Yield per acre	Total yield	Average price per bushel	Total annual value
1903	3,822,822	25.9	99,012,660	$ .30	$29,703,987
1904	4,018,980	29.4	118,435,570	.26	30,793,284
1905	4,177,545	33.8	146,439,240	.25	36,609,810
1906	4,166,800	34.0	142,036,530	.27	38,349,878
1907	4,536,170	24.5	111,190,400	.39	43,364,253
Average	4,144,463	29.5	123,422,880	.294	$35,764,205

*Year Book, Iowa Dept. of Agriculture.

The past season has been a very exceptional one. It has influenced to a marked degree all varieties of oats. Those which have proven the best in yield during a period of years with favorable conditions, though affected by the unfavorable conditions of the past season, have stood the test, proving to be varieties of high yielding value.

The oat crop is one of the most neglected. The matter of special varieties, preparing the seed, treatment for smut, and proper preparation of the seed bed is generally overlooked. This kind of management has resulted in a low income per acre until it has become common to hear the expression that "Oats are not a paying crop but are necessary for a rotation."

It is the purpose of this bulletin to assist farmers in selecting their seed oats, treating the seed, and preparing the seed bed. Proper attention to these matters will add millions of bushels annually to the income of the state.

THE VARIETY TEST.

During the past ten years 70 varieties of oats have been grown at the Iowa Experiment Station. These have been raised on plats of equal size and of as nearly equal fertility as the Station fields will permit; so that the unprofitable kinds could be weeded out and a higher average maintained. This average deals with both yield and quality and the varieties dropped have been discarded for low yield, poor quality or lack of power to resist disease and drought.

The number of days growth required by these varieties ranges from 90 to 110. While it may be said that early oats are usually the best yielders, still some of the medium varieties ripening in from 95 to 100 days have done fully as well, and in some seasons have even exceeded them. The comparative yield of these two groups is largely a matter of season and depends upon the weather conditions at the time of flowering and filling. In years like 1906, with its splendid growing season, the best medium varieties out-yield the earlier ones. In seasons with very hot, wet weather during the flowering period, the earlier oats may be out of danger before these evil conditions arise.

In order to be safe it is recommended that the farmer raise a field of each, an early and a medium variety. There is also the advantage of distributing the labor at harvest time and of not being obliged to cut part of the crop after it is dead ripe and shattering badly.

How the Test Was Conducted.—The original test was started with 13 varieties in 1898. During the five years 1898 to 1902, inclusive, this number was increased to 36. Of these, 23 give sufficient data to warrant the drawing of some conclusions. The results of these years work will be found in the tables on pages 624 to 627.* Of these varieties only six have continued through the last five years (1903-1907), and of these six only one, Silvermine, can be said to have held a place as a leading oat of the state. These are seen in the following table:

AVERAGE FOR FIVE YEARS, 1898-1902.

Variety	Date ripe	Yield per acre	Weight per bushel
Early Champion	7–12	51.6	31½
Siberian	7–26	49.7	29
Green Mountain	7–24	49.6	30
Joanette	7–25	49.0	29½
Silvermine	7–24	46.8	29½
White Russian	7–26	40.0	27¾

During the last five years (1903-1907) 44 varieties have been grown. Some of these have only been raised one year and do not have sufficient data for conclusions, but there are 25 with more than a two year record. These are arranged in tabular form on pages 628 to 631, and their average on page 628.

Of the six original varieties still grown at the Station, the Silvermine now has a place at the top of the list in the average of the last three years yields. The second place has been taken by the Kherson, a Turkestan (60 day) oat, first raised at Ames in 1903. In the average for four years and for five years the Kherson has outranked the Silvermine in yield. The two may be considered of equal value from the standpoint of yield. Silvermine ripens in from 95 to 100 days; the Kherson in from 90 to 95 days.

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*The same number is retained by a variety throughout five years.

The relative merits of the oats we have been growing for the last three years is well set forth in the following chart showing the average yield for the last five, four and three years respectively:

AVERAGE YIELD OF OATS FOR FIVE, FOUR AND THREE YEARS AT AMES.

Five Years—1903-1907			Four Years—1904-1907			Three Years—1905-1907		
Variety	Yield	Weight per bu.	Variety	Yield	Weight per bu.	Variety	Yield	Weight per bu.
Kherson	54.9	30¾	Kherson	62.4	30¾	Silvermine	62.5	29¼
Silvermine	47.1	28½	Silvermine	55.8	28½	Kherson	62.1	30¼
			Wis. No. 4	52.1	29	Wis. No. 4	57.1	31¼
			W. Russian	50.9	29¼	W. Russian	53.3	28½
			Minn. No. 26	50.9	27	National	52.6	30¾
			National	49.8	30¼	Minn. No. 26	51.7	27½
Joanette	45.1	29	Joanette	49.8	29	Joanete	51.3	29¼
W. Alaska	42.8	31½	W. Alaska	49.7	31½	Irish Victor	51.2	27¾
			Minn. No. 6	48.6	28¼	Minn. No. 6	50.8	28¼
						W. Alaska	50.5	32¼
			Irish Victor	47.5	27	60 Day	48.3	30
Early Champ	42.3	30¼	Early Champ	43.8	30¼	Siberian	47.1	27¾
Siberian	41.7	24¾	Siberian	42.5	24¾	Early Champ.	46.7	31¼
						Russ. (Bruner)	46.7	27
			Tartar King	37.7	26	Tartar King	44.1	28¾
						Danish	42.0	26
						White Tartar	41.8	27
						Canadian	37.4	30¼
						Sparrowbill	31.2	23
						Dun	26.2	26

The average yield of oats for the state during the period of time shown in the chart above has been:

For 5 years, 1903-1907 inclusive	29.5 bu.
For 4 years, 1904-1907 inclusive	30.4 bu.
For 3 years, 1905-1907 inclusive	30.7 bu.

The average yield of all varieties at the Experiment Station for three years, 1905-1907 inclusive, has been 47.7 bushels. This includes 20 varieties, ranging from 62.5 to 26.2 bushels per acre.

From these figures it may be seen that, after considering all other factors that influence yield, the general use of a superior variety of oats would add from eight to ten bushels to every acre grown.

VARIETY TEST OF OATS.

FIVE YEARS' AVERAGE—1898-1902 INCLUSIVE.

Variety	Maturity					Yield		
	Years tested	Earliest date ripe	Latest date ripe	Average date ripe	Number days	Years tested	Bushels per acre	Weight per bushel
1. Early Champion	4	7- 6-00	7-21-02	7-12	92	5	51.6	31½
2. Early Dawson	4	7-11-01	7-25-02	7-17	96	5	47.2	30¼
3. Black Russian	4	7-11-01	7-28-02	7-18	99	5	46.3	29
4. Dep't Imp. No. 534	3	7-14-00	7-29-02	7-19	97	4	56.1	28¾
5. Texas Red Rustproof	4	7- 5-01	7-28-02	7-19	99	5	47.8	28½
6. Dep't Imp. No. 541	3	7-14-01	7-29-02	7-20	102	4	55.9	29¾
7. Dep't Imp. No. 533	3	7-14-01	7-29-02	7-20	101	4	54.1	27¾
8. Dep't Imp. No. 545	2	7-12-00	7-30-02	7-21	105	3	62.1	25
9. New Salt Lake	4	7-19-00	7-29-02	7-23	104	4	50.8	27¼
10. Siberian	4	7-19-00	7-29-02	7-23	103	5	49.7	29
11. Imp. Clydesdale	4	7-17-00	7-30-02	7-23	104	5	48.8	31¾
12. White Belgian	4	7-17-00	7-28-02	7-23	103	4	48.2	28
13. Lincoln	4	7-18-00	7-29-02	7-23	103	5	46.7	29
14. Illinois	4	7-18-00	7-29-02	7-24	104	4	52.8	29¼
15. Nebraska Goldmine	4	7-18-00	7-30-02	7-24	107	4	51.6	28
16. Green Mountain	4	7-20-00	7-30-02	7-24	104	4	49.6	30
17. Silvermine	4	7-17-00	7-29-02	7-24	104	5	46.8	29½
18. White Swede	4	7-19-00	7-29-02	7-24	104	4	46.3	27¼
19. Joanette	4	7-19-00	7-31-02	7-25	105	5	49.0	29½
20. White Russian	4	7-23-01	7-31-02	7-26	107	5	40.0	27¾
21. New Zealand Rustproof	3	7-23-01	7-30-99	7-26	101	3	37.5	28½
22. New Zealand	3	7-21-00	7-31-02	7-27	110	4	42.6	25½
23. Probesteier	2	7-25-00	7-29-99	7-27	104	3	36.0	24½

VARIETY TEST OF OATS.

1899.

Variety	Maturity			Yield	
	Date sown	Date ripe	Number days	Bushels per acre	Weight per bushel
1. Early Champion	4-15	7-12	88	62.5	29½
2. Early Dawson	4-15	7-19	95	59.1	28
3. Black Russian	4-15	7-20	96	61.3	25
4. Dep't Imp. No. 534	4-24	--------	------	73.0	26
5. Texas Red Rustproof	4-15	7-25	101	64.5	25
6. Dep't Imp. No. 541	4-22	--------	------	84.0	25½
7. Dep't Imp. No. 533	4-22	--------	------	54.8	24
8. Dep't Imp. No. 545	4-22	--------	------	62.2	24
9. New Salt Lake	4-15	7-24	100	54.5	22
10. Siberian	4-15	7-23	99	58.1	25
11. Imp. Clydesdale	4-15	7-24	100	54.3	28
12. White Belgian	4-15	7-25	101	60.0	25
13. Lincoln	4-15	7-23	99	47.6	24
14. Illinois	4-15	7-25	101	45.5	25½
15. Nebraska Goldmine	4-15	7-25	101	58.0	26
16. Green Mountain	4-15	7-25	101	52.5	26
17. Silvermine	4-15	7-27	103	68.0	25
18. White Swede	4-15	7-25	101	48.3	25
19. Joanette	4-15	7-25	101	54.5	25½
20. White Russian	4-15	7-27	103	36.3	22
21. New Zealand Rustproof	4-15	7-30	106	30.0	23
22. New Zealand	4-15	7-29	105	48.3	26
23. Probesteier	4-15	7-29	105	42.6	24
Dep't Imp. No. 546	4-22	--------	------	71.8	25
Dep't Imp. No. 527	4-22	--------	------	67.5	25½
Dep't Imp. No. 538	4-22	--------	------	57.2	30½
Dep't Imp. No. 612	4-24	--------	------	56.4	26½
Dep't Imp. No. 536	4-22	--------	------	51.6	22½
Dep't Imp. No. 617	4-24	--------	------	35.5	22½
Dep't Imp. No. 613	4-22	--------	------	35.4	26
Black Tartarian	4-15	7-26	102	26.9	22
Russian Dep't Imp. No. 2800	4-18	--------	------	24.0	29
Russian Dep't Imp. No. 2963	4-18	--------	------	21.2	21
Domestic Clydesdale	4-15	7-24	100	6.0	18

VARIETY TEST OF OATS.

1900.

Variety	Maturity			Yield	
	Date sown	Date ripe	Number days	Bushels per acre	Weight per bushel
1. Early Champion	4-14	7- 6	83	47.8	31½
2. Early Dawson	4-14	7-12	87	53.8	29
3. Black Russian	4-14	7-15	92	40.0	27
4. Dep't Imp. No. 534	4-14	7-14	89	48.8	29½
5. Texas Red Rustproof	4-14	7-16	93	47.5	24½
6. Dep't Imp. No. 541	4-14	7-18	95	50.3	29½
7. Dep't Imp. No. 533	4-14	7-16	93	54.1	28½
8. Dep't Imp. No. 545	4-14	7-12	87	72.5	25
9. New Salt Lake	4-14	7-19	96	63.1	25¼
10. Siberian	4-14	7-19	96	57.7	27¾
11. Imp. Clydesdale	4-14	7-17	94	48.4	28½
12. White Belgian	4-14	7-17	94	47.2	24½
13. Lincoln	4-14	7-18	95	55.3	29
14. Illinois	4-14	7-18	95	55.6	29
15. Nebraska Goldmine	4-14	7-18	95	58.4	23½
16. Green Mountain	4-14	7-20	97	62.5	31½
17. Silvermine	4-14	7-17	94	49.4	26½
18. White Swede	4-14	7-19	96	61.9	24
19. Joanette	4-14	7-19	96	44.4	27¾
20. White Russian	4-14	7-25	102	42.2	27¾
21. New Zealand Rustproof	4-14	7-24	101	26.9	26½
22. New Zealand	4-14	7-21	98	40.0	25½
23. Probesteier	4-14	7-25	102	27.8	25
Dep't Imp. No. 538	4-14	7-13	88	53.4	23¼
Dep't Imp. No. 617	4-14	7-20	97	52.5	27
Dep't Imp. No. 546	4-14	7-15	92	50.0	26¾
Dep't Imp. No. 536	4-14	7-13	88	49.7	26¼
Dep't Imp. No. 527	4-14	7-18	95	47.8	27¼
Dep't Imp. No. 612	4-14	7-17	94	46.9	28½
Dep't Imp. No. 613	4-14	7-18	95	36.9	29
Russian Dep't Imp. No. 2963	4-14	7-13	88	36.9	26½
Russian Dep't Imp. Imp. No. 2800	4-14	7-13	88	33.7	28¾

VARIETY TEST OF OATS.

1901.

Variety	Maturity			Yield	
	Date sown	Date ripe	Number days	Bushels per acre	Weight per bushel
1. Early Champion	4-18	7- 9	82	45.6	35½
2. Early Dawson	4-18	7-11	84	49.2	41¼
3. Black Russian	4-18	7-11	84	59.7	36½
4. Dep't Imp. No. 534	4-18	7-14	87	54.5	31
5. Texas Red Rustproof	4-18	7-23	78	53.5	37¼
6. Dep't Imp. No. 541	4-18	7-14	87	49.5	35½
7. Dep't Imp. No. 533	4-18	7-14	87	44.0	30¼
9. New Salt Lake	4-18	7-22	95	45.9	38¼
10. Siberian	4-18	7-22	95	42.4	38½
11. Imp. Clydesdale	4-18	7-23	96	30.0	42¼
12. White Belgian	4-18	7-22	95	48.5	39
13. Lincoln	4-18	7-22	95	54.7	38¼
14. Illinois	4-18	7-23	96	55.9	37¾
15. Nebraska Goldmine	4-18	7-23	96	51.8	38¾
16. Green Mountain	4-18	7-23	96	44.5	40
17. Silvermine	4-18	7-22	95	58.4	38½
18. White Swede	4-18	7-22	95	43.9	39
19. Joanette	4-18	7-24	97	50.0	37¼
20. White Russian	4-18	7-23	96	50.3	37¼
21. New Zealand Rustproof	4-18	7-23	96	55.5	37¾
Pioneer	4-18	7-21	94	49.8	38¼
Imported	4-18	7-20	93	41.4	35¾
Garton's Tartar King	4-18	7-20	93	32.9	40
Sweden Dep't Imp. No. 5471	4-18	7-23	96	26.7	42

VARIETY TEST OF OATS.

1902.

Variety	Maturity			Yield	
	Date sown	Date ripe	Number days	Bushels per acre	Weight per bushel
1. Early Champion	3-27	7-21	116	60.0	30
2. Early Champion	3-27	7-25	120	21.5	25
3. Black Russian	3-27	7-28	123	52.9	28
4. Dep't Imp. No. 534	3-27	7-29	124	48.2	28½
5. Texas Red Rustproof	3-27	7-28	123	49.7	27½
6. Dep't Imp. No. 541	3-27	7-29	124	40.0	29
7. Dep't Imp. No. 533	3-27	7-29	124	64.1	27½
8. Dep't Imp. No. 545	3-27	7-30	125	51.5	26
9. New Salt Lake	3-27	7-29	124	40.3	23½
10. Siberian	3-27	7-29	124	34.1	25
11. Imp. Clydesdale	3-27	7-30	125	51.5	27½
12. White Belgian	3-27	7-28	123	37-0	24
13. Lincoln	3-27	7-29	124	48.2	25
14. Illinois	3-27	7-29	124	54.1	25
15. Nebraska Goldmine	3-27	7-30	125	38.3	24
16. Green Mountain	3-27	7-30	125	38.8	23
17. Silvermine	3-27	7-29	124	37.3	28
18. White Swede	3-27	7-29	124	31.2	21½
19. Joanette	3-27	7-31	126	50.9	27½
20. White Russian	3-27	7-31	126	40.0	23½
22. New Zealand	3-27	7-31	126	43.2	25½
Sweden Dep't Imp. No. 5471	3-27	7-28	123	49.1	27
Goldfinder	3-27	7-31	126	27.3	23
Pioneer	3-27	7-26	121	26.7	20
Garton's Tartar King	3-27	7-26	121	21.5	21½

VARIETY TEST OF OATS.

FIVE YEARS AVERAGE—1903-1907 INCLUSIVE.

Variety	Maturity					Yield		
	Years tested	Earliest date ripe	Latest date ripe	Average date ripe	Number days	Years tested	Bushels per acre	Weight per bushel
1. Sixty Day	3	7- 8-06	7-18-07	7-14	93	3	48.3	30
2. White Alaska	5	7- 8-06	7-23-03	7-15	93	5	42.8	31½
3. Early Champion	5	7- 8-06	7-19-07	7-15	92	5	42.3	30¼
4. Kherson	5	7- 8-06	7-21-03	7-16	94	5	54.9	30¼
5. Green Mountain	3	7-13-04	7-23-03	7-17	95	3	43.8	31¾
6. Wisconsin No. 4	4	7-16-04	7-25-07	7-21	101	4	52.1	29
7. Minnesota No. 6	4	7-17-04	7-25-07	7-21	101	4	48.6	28¼
8. Tartar King	5	7-18-06	7-24-07	7-21	100	4	37.7	26
9. Canadian	3	7-18-06	7-25-07	7-21	100	3	37.4	30¼
10. Myrick	2	7-18-06	7-26-07	7-22	99	2	55.2	25
11. Early Gotham	2	7-20-06	7-24-07	7-22	100	2	51.8	25
12. Minnesota No. 26	4	7-18-06	7-25-07	7-22	101	4	50.9	27
13. Silvermine	5	7-18-06	7-25-05	7-22	100	5	47.1	28½
14. Green Russian	2	7-20-06	7-26-07	7-23	98	2	50.7	23¼
15. National	4	7-20-04	7-25-07	7-23	101	4	49.8	30½
16. Irish Victor	4	7-18-06	7-29-05	7-23	103	4	47.5	27
17. Russian (Bruner)	3	7-18-06	7-26-07	7-23	102	3	46.7	27
18. Danish	3	7-22-06	7-25-07	7-24	103	3	42.0	26
19. Siberian	5	7-20-06	7-29-05	7-24	101	5	41.7	24¾
20. Joanette	5	7-22-06	7-29-05	7-25	103	5	45.1	29
21. White Bonanza	3	7-19-04	7-29-05	7-25	104	3	42.5	25½
22. Dun	3	7-23-07	7-29-05	7-26	104	3	26.2	26
23. Sparrowbill	3	7-22-06	7-31-05	7-27	105	3	31.2	23
24. White Tartar	3	7-25-06	7-31-05	7-29	107	3	41.8	27
25. White Russian	4	7-25-06	8- 2-04	7-30	109	4	50.9	29¼

VARIETY TEST OF OATS.

1903.

Variety	Maturity			Resistance				Yield	
	Date sown	Date ripe	Number days	% Smut	% Rust	% Blight	% Lodged	Bushels per acre	Weight per bushel
2. White Alaska	4-18	7-23	96	------	------	------	7	15.0	------
3 Early Champion	4-18	7-18	91	------	------	------	60	36.2	------
4. Kherson	4-18	7-21	94	------	------	------	18	25.0	------
5. Green Mountain	4-18	7-23	96	------	------	------	20	31.2	------
8. Tartar King	4-18	7-24	97	------	------	------	35	--------	------
13. Silvermine	4-18	7-24	97	------	------	------	18	11.2	------
19. Siberian	4-18	7-25	98	------	------	------	8	38.7	------
20. Joanette	4-18	7-25	98	------	------	------	8	26.0	------
Early Dawson	4-18	7-20	93	------	------	------	80	35.0	------
Pioneer	4-18	7-23	96	------	------	------	45	31.1	------
Lincoln	4-18	7-25	98	------	------	------	18	30.0	------
Goldfinder	4-18	7-25	98	------	------	------	12	--------	------
Danbury	4-18	7-23	96	------	------	------	35	--------	------

VARIETY TEST OF OATS.

1904.

Variety	Maturity			Resistance				Yield	
	Date sown	Date ripe	Number days	% Smut	% Rust	% Blight	% Lodged	Bushels per acre	Weight per bushel
2. White Alaska	4-12	7-13	92	0.9	80	------	70	47.5	29
3. Early Champion	4-13	7-13	91	0.1	70	------	30	35.5	27½
4. Kherson	4-12	7-15	94	0.	50	------	0	57.5	32
5. Green Mountain	4-13	7-13	91	0.2	70	------	2	36.6	28
6. Wisconsin No. 4	4-12	7-16	95	0.	65	------	40	37.2	23
7. Minnesota No. 6	4-13	7-17	95	0.	50	------	30	41.9	28
8. Tartar King	4-13	7-20	98	0.2	80	------	75	18.4	18
12. Minnesota No. 26	4-13	7-21	99	0.	65	------	35	48.4	25
13. Silvermine	4-13	7-21	99	0.2	65	------	40	36.6	26
15. National	4-13	7-20	98	0.1	65	------	20	41.2	30
16. Irish Victor	4-13	7-21	99	0.	40	------	5	35.3	24
19. Siberian	4-13	7-22	100	0.	40	------	5	28.7	16
20. Joanette	4-13	7-23	101	0.	50	------	15	45.6	28
21. White Bonanza	4-13	7-19	97	0.	75	------	2	46.9	27
25. White Russian	4-13	8- 2	111	1.5	40	------	40	44.1	31
Rustless	4-13	7-23	101	0.	20	------	4	62.5	31
Lincoln	4-23	7-22	90	0.	70	------	3	29.7	25

VARIETY TEST OF OATS.

1905.

Variety	Maturity			Resistance				Yield	
	Date sown	Date ripe	Number days	% Smut	% Rust	% Blight	% Lodged	Bushels per acre	Weight per bushel
1. Sixty Day	4-12	7-17	97	2.2	light	0.	0	41.0	32
2. White Alaska	4-8	7-15	98	25.2	med.	0.	0	63.3	35½
3. Early Champion	4-8	7-15	93	10.2	light	2.5	25	56.2	35
4. Kherson	4-8	7-17	100	0.9	light	10.0	50	85.0	30½
5. Green Mountain	4-8	7-15	98	12.6	light	0.	0	63.7	35½
6. Wisconsin No. 4	4-8	7-25	108	0.2	light	5.0	75	66.8	37
7. Minnesota No. 6	4-8	7-25	108	0.7	light	8.0	100	61.0	34
8. Tartar King	4-8	7-21	104	2.6	0	0.	0	53.1	31
9. Canadian	4-12	7-21	100	1.3	0	0.	0	26.5	33
12. Minnesota No. 26	4-8	7-25	108	0.	bad	16.0	50	57.9	31
13. Silvermine	4-8	7-25	108	0.4	light	7.2	75	76.0	33
15. National	4-8	7-25	108	2.7	light	9.5	75	73.7	33½
16. Irish Victor	4-8	7-29	112	3.0	light	10.1	75	56.1	31½
17. Russian (Bruner)	4-12	7-25	104	0.2	0	0.	0	43.1	32
18. Danish	4-12	7-25	104	1.3	light	0.	0	37.7	28½
19. Siberian	4-8	7-29	112	2.5	0	0.	0	54.0	31
20. Joanette	4-8	7-29	112	0.	light	5.0	75	58.6	30½
21. White Bonanza	4-8	7-29	112	0.7	light	0.	0	63.4	32
22. Dun	4-12	7-29	108	0.2	0	0.	0	24.0	[illegible]
23. Sparrowhill	4-12	7-31	110	0.2	0	0.	0	20.6	30
24. White Tartar	4-12	7-31	110	0.	light	0.	0	34.6	30½
25. White Russian	4-8	7-31	114	2.4	light	18.7	100	63.7	32

VARIETY TEST OF OATS.

1906.

Variety	Maturity			Resistance				Yield	
	Date sown	Date ripe	Number days	% Smut	% Rust	% Blight	% Lodged	Bushels per acre	Weight per bushel
1. Sixty Day	4-12	7-8	87	7.0	5	------	------	64.8	33
2. White Alaska	4-12	7-8	87	--------	--------	------	------	52.3	35
3. Early Champion	4-12	7-8	87	18.0	light	------	------	54.7	35
4. Kherson	4-11	7-8	88	7.0	1	------	------	61.6	36
6. Wisconsin No. 4	4-11	7-18	98	light	18	------	------	72.4	36
7. Minnesota No. 6	4-11	7-18	98	--------	--------	------	------	67.4	35
8. Tartar King	4-11	7-18	98	3.0	2	------	------	54.6	36
9. Canadian	4-12	7-18	97	5.0	1	------	------	68.6	35
10. Myrick	4-12	7-18	97	0.	light	------	------	84.2	31
11. Early Gotham	4-12	7-20	99	3.0	0	------	------	78.7	33
12. Minnesota No. 26	4-11	7-18	97	--------	--------	------	------	71.6	31
13. Silvermine	4-12	7-18	97	3.0	5	------	------	80.0	34
14. Green Russian	4-16	7-20	95	--------	--------	------	------	65.3	32½
15. National	4-16	7-22	97	1.0	light	------	------	58.2	38½
16. Irish Victor	4-12	7-18	97	--------	--------	------	------	69.6	33
17. Russian (Bruner)	4-11	7-18	98	--------	--------	------	------	63.6	31½
18. Danish	4-12	7-22	101	7.0	--------	------	------	54.3	34
19. Siberian	4-16	7-20	95	1.0	10	------	------	58.1	32
20. Joanette	4-12	7-22	101	0.	light	------	------	59.6	35
22. Dun	4-12	7-25	104	--------	--------	------	------	35.6	31
23. Sparrowbill	4-12	7-22	101	6.0	10	------	------	54.2	29
24. White Tartar	4-12	7-25	104	--------	--------	------	------	65.0	32
25. White Russian	4-12	7-25	104	10.0	15	------	------	69.0	36

VARIETY TEST OF OATS.

1907.

Variety	Maturity			Resistance				Yield	
	Date sown	Date ripe	Number days	% Smut	% Rust	% Blight	% Lodged	Bushels per acre	Weight per bushel
1. Sixty Day	4-15	7-18	94	0.	0	------	23	39.2	25
2. White Alaska	4-15	7-18	94	0.	39	------	15	35.9	26
3. Early Champion	4-15	7-19	95	0.	26	------	25	29.3	23⅓
4. Kherson	4-15	7-19	95	1.0	78	------	33	45.6	24⅓
6. Wisconsin No. 4	4-13	7-25	103	0.	93	------	36	32.0	20⅓
7. Minnesota No. 6	4-13	7-25	103	0.	80	------	14	24.0	16
8. Tartar King	4-13	7-24	102	1.5	48	------	20	24-7	19½
9. Canadian	4-13	7-25	103	0.	69	------	10	17.1	23
10. Myrick	4-15	7-26	102	0.	79	------	8	26.2	19
11. Early Gotham	4-13	7-24	102	1.2	78	------	14	25.9	17
12. Minnesota No. 26	4-15	7-25	101	0.	93	------	9	25.6	20¼
13. Silvermine	4-15	7-24	100	0.	71	------	15	31.5	20⅓
14. Green Russian	4-15	7-26	102	0.	1	------	1	36.2	24
15. National	4-13	7-25	103	0.	81	------	15	26.0	20
16. Irish Victor	4-13	7-25	103	0.	73	------	12	28.0	19
17. Russian (Bruner)	4-13	7-26	104	3.7	64	------	17	28.4	18
18. Danish	4-13	7-25	103	0.	87	------	10	24.0	15½
19. Siberian	4-15	7-25	101	0.	74	------	7	29.2	20
20. Joanette	4-13	7-26	104	0.	76	------	9	35.6	22½
21. White Bonânza	4-11	7-27	107	0.	71	-----	13	17.1	18
22. Dun	4-13	7-23	101	0.	64	------	12	19.0	19
23. Sparrowbill	4-13	7-27	105	1.5	20	------	31	18.7	13
24. White Tartar	4-13	7-30	108	0.	24	------	8	25.8	18½
25. White Russian	4-13	7-30	108	0.	52	------	7	27.1	18
New Sixty Day	4-11	7-18	98	4.0	2	------	5	50.1	25
Kan. Sixty Day	4-11	7-18	98	1.0	2	------	4	47.3	24
Red Texas	4-11	7-21	101	0.	81	------	44	35.8	30
American Banner	4-11	7-31	111	0.	51	------	9	27.1	20½
Johnson	4-10	7-24	105	8.5	57	------	15	21.5	22½
Dom. Clydesdale	4-13	7-27	105	0.	83	------	18	20.6	16⅔
Probesteier	4-13	7-25	103	0.	83	------	12	19.3	19
Portland	4-13	7-23	101	0.	72	------	31	18.7	17½
Black Beauty	4-11	7-29	109	1.8	93	------	24	18.7	15⅓
Imp. Clydesdale	4-13	7-25	103	0.	89	------	18	17.0	17½
Lincoln	4-11	7-23	103	0.	80	------	19	16.2	18
G. G. Side Oats	4-10	7-29	110	0.	76	------	60	15.8	15½
Welcome	4-10	7-22	103	4.9	74	------	57	15.3	17

PREPARING THE SEED.

The practice of securing seed oats from the bin is both undesirable and expensive. It is not uncommon for an endgate seeder to be backed up to a bin and loaded with oats that have not been rehandled since coming from the thresher.

An exceedingly small percentage of the oats used for seed have been sufficiently fanned and cleaned. Seldom are they run through the machine more than once. Once is not enough to make the proper separations. A third and fourth time through is often necessary. It may be conservatively said that from 25 to 40 per cent of the oats generally used for seed should have been eliminated. Take a handfull of oats and examine them carefully. A large percentage will be found to be small or of just medium size, and many extremely light because they are largely composed of hull. By thoroughly fanning and grading, the light oats will be fanned out. The larger, heavier grains should be retained for seed, and the small and medium sized ones may be fed. Oats for seed purposes should never weigh less than 28 pounds per bushel. This may be considered low for the best results.

Undoubtedly a large amount of seed oats will be used this season that has been grown outside the state. In such case, care should be taken that they are properly cleaned and free from objectionable weed seeds. Seed secured from the north may, under ordinary conditions, be expected to give satisfaction (especially so this season). Oats from the irrigated regions have not been tested sufficiently by this Station to permit their being recommended for use in this district.

SMUT—ADVANTAGES OF TREATMENT.

The occurrence of smut in the oat crop of the state is a serious problem and its effect is greatly underestimated. Comparatively few farmers give this disease any attention whatever, and it is apparent that every smutted head is an absolute loss.

In the years 1904-1906-1907 circulars were sent out to the members of the Iowa Corn Growers' Association and the Short Course students of the college, asking that they calculate the percentages of smut in the crops of the ensuing season. The following replies were received:

In 1904 131 farmers 13 treated for smut
In 1906 84 farmers 7 treated for smut
In 1907 147 farmers 33 treated for smut

These counts represent:

1904 321 fields of which 30 were treated for smut
1906 89 fields of which 8 were treated for smut
1907 248 fields of which 17 were treated for smut

The treatment of oats for smut with formalin is a simple process and its effect as it is used by different farmers may be seen in the following tables:

Name	Post Office	Variety	Treated % Smut	Not treated % Smut
1907				
Gamble, T. H	Humboldt	Big 4	0.	0.
Miller, E. A	Kalona	Progress	0.6	0.3
Iowa Experiment Station	Ames	Wisconsin No. 4	0.	0.5
Iowa Experiment Station	Ames	Silvermine	0.	1.4
Iowa Experiment Station	Ames	Kherson	0.	1.8
George, B. T	Janesville	Early Champion	0.	1.8
Miller, W. J	Ankeny		1.3	2.2
Eberle, J. H	Manilla		0.	2.2
Hodson, J. L	Agency	Early Champion	0.3	2.5
Behrens, O. C	Volga		0.5	4.1
Neff, C. H	Liscomb	Kherson	0.4	4.2
Bennington, G. W	Volga	20th Century	0.4	6.1
Bates, H. A	Algona	Early Champion	0.	6.3
Hofler, J. T	Nora Springs	Early Champion	0.4	8.8
Mead A. E	Manchester	White	1.3	9.0
1906				
Saunders, J. F	Rudd	Early Champion	0.5	17.9
1905				
Iowa Experiment Station	Ames	Joanette	0.	0.
Iowa Experiment Station	Ames	White Russian	0.6	2.4
1904				
Bailey, J. H	Diagonal	Early Champion	2.7	5.4
Ward, Walter E	Kiron		2.7	5.4
		Average	0.4	3.9

The following table shows the comparative results obtained in 1907 in 40 fields, 20 of which were treated and 20 not treated.

Treated			Not Treated		
Field number	Variety	% Smut	Field number	Variety	% Smut
1	White Russian	2.7	21	Green Russian	11.7
2	Kherson	2.7	22	4th July	11.6
3	Silvermine	1.3	23	Early Champion	9.7
4	Golden	0.9	24	Early Champion	8.8
5	Silvermine	0.8	25	4th July	8.1
6	Minnesota No. 26	0.7	26	Swedish Select	7.9
7	Early Champion	0.6	27	June	7.5
8	Yellow	0.6	28	Green Russian	7.5
9	Swedish Select	0.5	29		7.2
10	Early Champion	0.5	30	Early Champion	7.2
11	Silvermine	0.4	31		7.1
12	Early Champion	0.5	32	White German	6.9
13		0.4	33	Early Champion	6.7
14	Silvermine	0.	34		6.2
15	White Gem	0.	35	Early Champion	6.1
16	Early Champion	0.	36		5.9
17	Early Champion	0.	37	Early Champion	5.9
18	Lincoln	0.	38	4th July	5.9
19	Early Champion	0.	39	Early Champion	5.8
20	Silvermine	0.	40	Early Champion	5.4
	Average	0.6		Average	7.9

The average of the 80 fields given above shows that the treated fields have an average of 0.5 percent smut while those that were not treated have more than ten times that amount (5.9 per cent) or an actual loss of 5.4 per cent of the crop. This means a loss of 1.6 bushels per acre when it would have cost but 8 cents per acre for treatment. When this is figured up to a 40-acre field we find the farmer has sold 64 bushels of oats for about $3.00.

The formalin treatment for smut in oats is inexpensive. It is given in detail in Bulletin 89, Ia. Exp. Station, which may be had on application.

PREPARATION OF THE SEED.

This is a much neglected operation, in fact, the practice very generally carried on is not to first prepare the seed bed before the oats are put in, but rather to sow the grain, then disc and harrow that the seed may be covered.

This will be shown by the following table which has been compiled from answers received by the Department of Soils to a circular letter sent out to the farmers of Iowa in 1905, inquiring as to the preparation of the seed bed. Four hundred and fifty-two replies were received:

3.4 per cent	Put oats on other than stalk grounds
3.5 per cent	Raked and burned corn stalks
21.4 per cent	Broke stalks
71.7 per cent	Neither broke, harrowed nor burned stalks
13.3 per cent	Disced ground before sowing the oats
16.7 per cent	Disced both before and after sowing
70. per cent	Disced after sowing oats
9.2 per cent	Harrowed both before and after sowing
11. per cent	Harrowed ground before sowing

97.5 per cent	Harrowed after sowing
3.7 per cent	Harrowed small grain after it was up
0. per cent	No one reported rolling small grain

It will be observed that practically all sow oats on stalk ground and that 71 per cent sow on unprepared stalk ground. Almost all harrow in the oats after seeding, while 70 per cent disc the ground after sowing.

The burning of the stalks may be considered a wasteful practice. Our soils in general are in need of humus making material. A good sharp disc will cut the stalks up very well. However, it will have to be admitted that the seed bed can be put in a much more satisfactory condition for receiving the seed, insuring a more even stand, when the stalks have been broken down, raked and burned. Many stalks interfere with an even covering of the seed, especially where the stalks have not been pastured and are heavy.

If the disc be sharp much of this trouble can be eliminated. To prepare a suitable seed bed for oats, corn stalk ground should be disced at least twice, lapping the disc half, and in addition to this it will pay to double harrow. Some seasons may require more discing. Seldom can the seed bed be prepared with less. The disc drill will be found especially suited for putting in oats on stalk ground.

As to whether the ground should be harrowed afterward depends largely upon conditions. In general it is not necessary when a good seed bed has been prepared before hand. It is essential that the seed be covered, and as evenly as possible, at a depth of from 1½ to 2½ inches. A deep seed bed is not recommended, as oats respond better to one more firm; 3 to 3½ inches in depth is sufficient. It is all important that the seed bed for oats be properly prepared for oats before the oats are put in.

RATE OF SEEDING.

The amount of seed which should be sown on an acre will vary somewhat with the land and method of seeding. In all the experiments carried on at this Station with reference to rate of seeding, a disc-drill has been used. It will be seen by the following table that three bushels per acre has, in every instance but one, given us a heavier yield than has a less amount. The table shows the results for three years work with an early and a medium variety:

SIX EXPERIMENTS SHOWING THE EFFECT OF "RATE OF SEEDING" UPON YIELD OF OATS.

Rate Per Acre	1899	1906			1907	
	Early champion	Wisconsin number 4	Kherson	Silvermine	Kherson	Silvermine
4 pecks	35.1	50.9	61.2	54.7	40.9	22.5
6 pecks	41.4	65.0	69.3	61.9	48.7	24.6
8 pecks	41.6	66.8	66.9	62.5	50.9	27.8
10 pecks	41.0	68.7	74.3	65.0	45.6	28.4
12 pecks	38.7	70.3	74.3	77.5	53.1	35.6

DRILLING VS. BROADCASTING.

When the oats are sowed broadcast instead of drilled, a heavier seeding is desirable as much of the seed remains uncovered or at best is only shallowly buried and thus fails to sprout until several days late. This produces a field that looks spotted all through the season.

The use of the drill is a much neglected point in the oat culture of the state. It has been held that drilling is not a very important factor with the oat crop, but it is evident that the drill not only saves seed but also increases the yield.

In seasons like 1907 with its cold, dry spring it is surprising to note the small number of acres required to offset the cost of a drill. Our data shows an increase of over nine bushels per acre in favor of drilling. Figuring this at 33 1-3 cents per bushel we find that less than 35 acres would have paid for a drill last year. So large a difference would hardly be expected in years more favorable to oat production, still an even stand is always desirable. A large amount of broadcast seed never comes up. The following table shows the results for the season of 1907with our two best varieties on plats side by side:

TABLE SHOWING THE LOSS OCCASIONED BY BROADCAST SEEDING OF OATS.

1907 Variety	Rate of seeding per acre	Disc Drill		Broadcast	
		Bushels per acre	Weight per bushel	Bushels per acre	Weight per bushel
Kherson	2½	54.3	25	46.4	22
Silvermine	2½	35.6	22	24.2	21
Average	--------	44.9	23½	35.3	21½

In addition to the above advantages secured by drilling over sowing broadcast, the drill has a decided advantage when oats are used as a nurse crop. Grass seeder attachments may be purchased with the drill. By drilling north and south the rays of the sun can more easily reach the young clover and timothy plants than when the grain has been sown broadcast. This is very helpful in producing plants that are stronger and more vigorous.

CONCLUSION.

Iowa raises on an average of 29.5 bushels of oats per acre. The highest yield in five years has been 34 bushels. The result of the work at this Station shows that the yield of oats in Iowa can be substantially increased. By the use of better varieties, a better quality of seed, treatment for smut, better preparation of seed bed and drilling, this average should be raised to more than 40 bushels per acre. Oats would not then be merely "A crop necessary for rotation."

AMOUNT OF OATS TO SOW PER ACRE.

Farmers' Tribune.

There is considerable difference of opinion among farmers as to the amount of oats to sow to the acre in order to obtain the best results. It is true that no set rule can be laid down as to the exact amount of seed to sow for the reason that the quality of the seed, the manner in which the seed bed has been prepared, and the fertility of the soil are factors all of which have more or less influence on this question. We are inclined to think however, that it is a subject which might profitably be studied by our experiment stations with a view of obtaining information on the effect of thick and thin seeding on the quality of the straw and upon such other characteristics as go to make up a first-class crop.

Generally speaking, the less the amount of seed sown, the more the plants tiller, and the greater the amount of seed sown the less the tillering. In other words, Nature attempts to bring about a full stand. Judging from the results obtained by the Garton Bros., of England, it would appear that we are not sowing enough seed per acre in this country. The Garton Bros. sow from four to five bushels of oats per acre, and we understand that they claim to obtain a stiffer straw from thick seeding, their theory being that plants which come direct from seeds produce a stiffer straw than suckers or tillers. Our experiment stations have investigated this question to some extent with some of the other grains but it appears to us that it has not been so fully investigated in the case of oats as the importance of the subject seems to warrant.

Mr. C. H. Fuller, a farmer at Ottosen, Iowa, is a believer in thick seeding of oats. He has done a little experimenting along this line on his own hook, and in a recent letter sends us the following information for the benefit of our readers: A few years ago, my brother bought a farm adjoining mine. He moved to this county (Humboldt) from the eastern part of the state, and claimmed that 2.5 bushels of seed was enough for an acre of oats. I said 'sow more' because it had been my experience that heavier seeding gave a better yield. Our conversation resulted in making a test of the matter. We laid off a piece of uniform ground on my brother's farm and seeded three strips of oats along side of each other. This resulted in obtaining the following yields in the fall: With two and one-half bushels of seed per acre, we received 35 bushels of oats in the fall; with three bushels per acre, we obtained a yield of 49 bushels and with three and one-half bushels per acre, a yield of 65 bushels. This experiment was repeated the following year and the results were: From two and one half bushels of seed per acre, a crop of 32.5 bushels was harvested; from three bushels per acre, 45 bushels was harvested; from three and one-half bushels, 61 bushels, and from four, 65 bushels.

"The third year I purchased four bushels of Big Four oats of a seedsman in Wisconsin, and sowed them on one acre of ground with the result that I harvested 140 bushels in the fall. The year following this experiment, I seeded 13 acres to Big Four oats at the rate of four bushels per acre, and harvested a crop of 80 bushels in the fall. From these and other facts that I have gathered on my own and my brother's farms, I have reached the conclusion that the best results are obtained by sowing three and one-half bushels of well cleaned oats per acre or four bushels of uncleaned seed. I do not, however, advise any man to sow uncleaned seed; good seed graders and fanning mills can now be obtained at small cost and they will pay for themselves, on the average farm, in a year's time."

It will be seen from the above that our correspondent, as an average of the first two years' trial, obtained at harvest time per bushel of seed sown, the following yields: 13.5, 15.7, 18 and 16.3 bushels, when the following number of bushels of seed per acre was used: 2½, 3, 3½ and 4. In view of the fact that much of the land in Iowa is getting too rich for profitable oat culture, it would undoubtedly pay our readers to investigate this question of thick and medium heavy seeding on a small scale for themselves. We should be pleased to hear from those who have facts at hand showing how much seed per acre to sow and what effect thin and thick seeding has upon the quality of the straw, as well as upon the yield of grain.

OATS IN THE CORN BELT.

Wallace's Farmer.

The corn belt proper, broadly defined as the corn surplus states, Ohio, Indiana, Illinois, Iowa, Missouri, Kansas and Nebraska, or those portions of the corn surplus states which actually produce a surplus, is not and never will be a first-class oats country for the reason that the climatic requirements of corn and oats are markedly different. Hence it is a common saying among farmers in those states that you cannot expect a bumper crop of corn and a bumper crop of oats in the same season.

The hot weather which is necessary to produce a bumper crop of corn tends to decrease the crop of oats, while the cool weather required for the development of a first-class crop of oats is fatal to a first-class crop of corn. The land cannot well be too rich for a crop of corn; and, therefore, the methods which farmers employ to maintain their lands in a very high state of fertility renders a crop of oats following very liable to lodge.

While this section of the country can never be a first-class oats country, it is exceedingly important to grow the largest amount of oats possible, at least until we are able to substitute to a large extent some other crop such as winter wheat for the oats. How to improve the oats crop under the climatic conditions existing in this territory is therefore one of the most perplexing problems with which the corn belt farmer has to deal, and we will discuss the various methods briefly.

The first thing toward enabling farmers to get the most out of the oats crop is to persuade the grain dealers to buy oats on their merits instead of by an arbitrary standard. There is very little inducement for the farmer to improve the quality of his oats if the grain dealers at the stations pay the same price for oats that weigh thirty-two pounds that they pay for oats weighing twenty-four pounds per bushel. The farmer says, "What's the use of my trying to produce oats of a fine quality if I get no greater price for them than the farmer who gives the subject no special attention? We have known dealers in a year when oats ran from twenty-four to thirty-two pounds to fix twenty-eight pounds as the standard and pay the same price for the extremes. This is the same foolish policy, ruinous to all concerned, that was followed by the country stores before the advent of the creamery, when they paid the "same old price" for grease that they did for farmers' butter fit to grace the table of royalty. It is the same policy as was followed by the early buyers of cattle who paid a uniform price for yearlings without any special reference to weight or quality.

There are several methods by which the quality and quantity of oats can be very materially increased in the corn belt states. Just which one of them is the best is not yet certainly known. There is one method, however, which can always be followed to great advantage, and that is to separate the heavy oats in any sample from the light, and then sow only the very best, always treating them for smut. Not more than two-thirds of the ordinary sample of oats is fit for seed. The smaller seed should be sieved out, and the lighter seed, irrespective of size, blown out, for the simple reason that these will produce weak and very likely immature plants, and thus deteriorate the quality without increasing the quantity.

One method worthy of more extensive trial than it has been given that of procuring seed from the oats country proper, that is, the latitude of Minnesota, northern Wisconsin and North Dakota. The basis of the theory is that in these sections, on account of the climate, oats secure their highest development; and that if oats are brought down to a less favorable climate they will retain their vitality for two or three years, of course giving an increased yield and of better quality. We would like very much if those who have tried this method would give us an accurate report of the results.

Another method is to secure oats from countries of similar climate, on the theory that having been grown for a very long period in that climate they have adapted themselves to it, and hence will give a greater yield than varieties that must become acclimated before they can produce the best results. As illustrations of this method we might cite the introduction of the Kherson oats into western Kansas and Nebraska, and the good results which have followed from their introduction into the more humid climates of Iowa and Illinois. Similar results have followed from the introduction of Turkish Red wheat, Manshury barley, Turkestan alfalfa and various fruits from the more northerly sections of the fruit belt in Europe. We believe that the introduction of such varieties, followed by careful selection, will lead to a very considerable increase of oats in the corn belt.

Another method is that of the gradual acclimation of oats that have already become acclimated to a warmer climate and are capable of resisting the rusts, smuts, and blights which so seriously interfere with the yield of oats in a climate adapted to the growth of corn. The Kansas Experiment Station, for example, has found the Texas Red oats and other varieties from Tennessee to be the best yielders in the experiments conducted with oats at that station for three years. It further notes that the Texas Red has improved in quality after being under cultivation some years at Manhattan, yielding much better on three-year trials than some of the improved varieties brought from North Dakota and almost as well as Kherson oats brought from the Nebraska Experiment Station.

Still another method is that of cross-breeding. This method is practicable only at the experiment stations, one object of cross-breeding being to take advantage of the variations produced by that method, and another to secure greater vitality by crossing with wild types.

We were greatly interested recently in studying samples of improved oats from the Garton plant breeding establishment near Liverpool, England, and particularly in a type of hulless oats produced by crossing the British oats on a wild Chinese hulless type. Photographs were made of each of the successive crosses. The result was a type of hulless oats practically destitute of the hairs found on all of our common varieties of oats, which give the bitter taste to oat meal made from them. The improvement made in various grains, and especially in oats, at that establishment furnishes most conclusive proof that our plant breeders by adopting the same methods can produce some very surprising results.

A still further method of improvement would be the development of winter oats suitable to the latitude of the corn belt. Winter oats are grown successfully in the cotton belt.

OAT HAY.

Wallaces' Farmer.

We are sometimes asked whether, in case there is a short hay crop, it is advisable to use oats for a hay crop. Why not? Oats is a grass and can be used quite as well as timothy. Where a man has no timothy meadow and has plenty of oats, about the best thing he can do is to cut that oats when it is in the dough stage and make it into hay—not in the hard dough stage, but the soft dough, when you can take a grain of oats and mash it between your fingers.

It should be cured just like any other hay, but it should not be put in the barn. Why? Because if you do you will find by next spring that you have the biggest stock of mice on hand that you have ever had. Put it in the stack, cover it with slough grass or corn fodder, and keep plenty of cats.

There are other conditions when it is desirable to make oats into hay. For example, if your land is too rich to grow oats, which it is apt to be when you have plenty of stock and haul out the manure; or when the land is naturally rich and the season favorable to lodging, especially when you have seeded to timothy and clover. Under these circumstances we would not hesitate to mow the oats and use them for hay, curing them precisely as we would timothy and clover.

In the more eastern portions of our territory and in the more northern portions, where there are heavy dews and less sun heat during the day, farmers cure them in the cock. This is all right, but the cock should not be allowed to stand any longer than is necessary where the land has been seeded to clover and timothy, for the reason that while timothy will not be seriously injured, the clover under the cock will undoubtedly be killed.

Even when the oats do not lodge, if the season is dry and on examination it is found that the clover is becoming yellow and delicate looking, and you are anxious to have a good crop of clover, then you had better mow the oats and cure them for hay.

In fact, we believe that the man who has plenty of dairy cows and young stock will make quite as much net profit from his oats by making them into hay at the soft dough stage as he would if he went to the additional expense of cutting and thrashing.

ALFALFA AS A FOOD AND HOW TO GROW IT.

Wm. B. Goodrich, Climbing Hill, Iowa, Before Woodbury County Farmers' Institute.

The value of alfalfa is but little realized by the farmers of Iowa as a class, and in my opinion but few of the small number who are raising it fully appreciate its great usefulness and the extent to which its general and intelligent cultivation would add to the wealth of the farmers of this part of the State. Its importance is by no means limited to its use as feed for live stock. Its wonderful ability as a feeder and builder of the soil is found to be more and more appreciated as its cultivation is extended and its effect on the soil observed.

Nitrogen is one of the most necessary elements of fertility, and the most expensive. Alfalfa gathers it from the air for its own use and stores a surplus in the soil for the benefit of other crops which may follow on the same land. Its roots, penetrating the soil to great depths, bring up mineral elements of plant food, leaving them near the surface, and also draw up an immense amount of moisture. The surface soil of an alfalfa field becomes so moist that the space between the plants is frequently covered with moss.

The mechanical effect of these roots on the subsoil is very beneficial, especially where it is of a clayey or of a compact nature, by making it more porous for the passage of air and water. The decay of these roots, and the leaves which fall to the ground at each cutting add a large amount of necessary humus to the soil. Further than this the barnyard manure where alfalfa is fed is a richer fertilizer than that from any other forage crop and will be of greater benefit to the soil when returned to it.

This question of restoring fertility to our soils is one of growing importance, and one to which we must turn our serious attention, for it is the keynote of successful agriculture. No soil, however rich in a virgin state, is inexhaustible, and the longer its resources are drawn upon without compensation the greater will be the difficulty of restoring it when it finally refuses to yield an adequate return for its cultivation.

To be sure, we have valleys that are annually enriched by the wash from higher land, and will never grow poorer so long as the higher land has fertility to supply it. But what of this higher land? It is being robbed both by nature and by the short-sighted farmer and the time has already arrived at some of it, here in Woodbury county, must be fed and nursed back to a more productive state or it will not pay for the labor of farming.

The fact that alfalfa will produce twice as many tons of hay per acre as any other forage plant we can grow here and that it has a greater value per ton, thus enabling us to keep more stock on a given amount of land to help sustain its fertility, added to its power to build up the soil while growing, proves its great value for this purpose. When we further consider that at the same time our live stock return us a greater net profit because of the cheapness and excellence of alfalfa as a feed, the conclusion is that when its value is appreciated and its cultivation understood it must become one of our staple crops.

Well cured alfalfa contains more feeding value per ton, especially protein (which so many of our other feeds lack) than any other hay. All kinds of live stock relish it and do well on it, including hogs and poultry, It is especially valuable to the dairyman and the cattle feeder, as with it a balanced ration can be made without buying high-priced oil meal or other concentrates.

Any well drained land in Woodbury county that will grow fair corn will grow good alfalfa. The thin soil of our ridges will yield big crops of it if well manured before sowing, but if the ground is poor it will be a slow process getting it started. We have always practiced sowing alfalfa in the spring. The land intended for alfalfa is planted to corn the previous year and kept as clean from weeds as possible. In the spring all stalks and trash are removed and the ground leveled, stirring the soil no more than is necessary to do this, or to cover the small grain which we usually sow for a nurse crop. The disc drill is an ideal tool for putting in alfalfa. When this tool is used 15 to 18 pounds of seed to the acre is enough. If sowed broadcast and harrowed in I would advise 20 pounds and if the seed does not all sprout when tested add enough to make up for the poor seed, but it is more satisfactory to have good seed. We use either oats or barley for a nurse crop. When oats is used we sow one and one-half to two bushels per acre and cut it for hay as soon as it is headed. Last year we sowed five pecks of barley per acre on rich ground and allowed it to ripen, but as a rule it is dangerous to the young alfalfa to let the nurse crop ripen.

After the nurse crop is removed we leave all after growth for winter protection. As early as possible in the spring, some day when the stubble is dry and the ground moist, we burn it off to get rid of the trash. Alfalfa will yield three and sometimes four crops a year here. It should be cut as soon as it fairly begins to blossom. When you find by looking at the crown of the plant, at the ground, that the next growth is starting, it is ready to cut. The aftermath in the fall should be left for protection and stock kept off at all times. Do not cut the last crop later than the middle of September.

It is easier to make first-class alfalfa hay in all kinds of weather than any other kind of tame hay we grow here. This statement may cause some surprise and there may be some inclined to dispute it from their own experience, but I believe no one who has practiced the right method will question its truth. I will endeavor to describe in detail how we have handled it with uniform success during the past five seasons, which, I think, you will agree have not been without an abundance of rain during the alfalfa haying season. We always take off the dividing board of our mower. This is an important point. I wish to impress on you that it is essential to success that the cut alfalfa must lay in an even, thin layer on the ground so that it may dry sufficiently for raking as evenly as possible. This is especially important if rain should fall soon after cutting. If it lies as it falls it will dry as quickly as though cut after the rain and without damage, provided it had not already dried too much before the rain, whereas, if the dividing board is used the thick ridges and bunches made by it will not be in condition to rake for from one to three days, and in the meantime the balance has been parched to a crisp, and perhaps another rain falls and it is all seriously damaged.

We never cut more at one time than we can put into cocks before it is dry enough for the leaves to break. The secret of success lies in never letting alfalfa get dry until after it is in the mow or stack. On a good drying day the morning's cutting can be raked and cocked in the afternoon. We have sometimes handled it three hours after cutting. If very heavy when raked small cocks should be made and it will take a little longer for it to get dry enough for the stack or mow, but the quality of hay will not suffer. In cutting it is not necessary to wait for dew or rain to dry off, as with clover, as it does not mat to the ground, but lies loose enough for air to pass through. Windrows should not be made too large; in a good crop they should only be about 10 steps apart. We put two or two and one-half dumps of the rake in a cock, and never bunch it with the rake, but make neat, round-topped cocks by stacking one forkful on top of another. Alfalfa handles so nicely that this work can be done very rapidly, especially by making rather small cocks, which are the best in every way. We never risk any hay in the windrow. If it is to be rained on before it is cocked up we prefer it in the swath. Therefore, if the weather is threatening we only rake a little at a time and never leave any windrows over night. When safely in the cock we consider it practically secure. No ordinary wind will disturb it nor rain damage it to any extent if it is left alone. It should never be touched after a rain until the weather has settled and it has dried out so that by turning the cocks upside down in the morning they will do to put in the same day.

If the cocks are not too large all the surplus moisture will be found next to the ground and will evaporate very rapidly when exposed to the sun and wind. They will be set and firm, shaped like half an orange and a man can turn over a row of them as fast as he can walk across the field. If more are turned over than can be put in that day the rest can be turned upright in a few minutes and will be in nearly as good shape as if never disturbed.

Alfalfa hay made in this way retains all its leaves (the most valuable part), is bright green, and is as much better than the bleached, leafless stems put up by more careless methods and often with as much, or more, labor, as bright well cured corn fodder is better than weather-beaten stalks we saw in the fields along the road today.

To the skeptical, who are looking for the easy way and think this involves too much labor, I will only say try it; especially if you have already had some sad experience following some other method. Remember, never let one part of the work get ahead of another. Get the hay into the cock as soon as possible after it is cut and never tear those cocks to pieces until you are ready to put the hay in immediately.

WAGES ON THE FARM.

The Orange Judd Farmer has collected reports on wages paid farm hands in the principal agricultural states for the last three years with the results shown in the following table:

State	1906	1905	1904
Illinois	$20 to $32	$20 to $30	$20 to $30
Iowa	20 to 28	20 to 25	20 to 24
Nebraska	20 to 30	18 to 24	18 to 22
Indiana	20 to 28	18 to 22	16 to 21
Minnesota	22 to 30	20 to 25	20 to 25
Michigan	23 to 36	20 to 25	18 to 23
Missouri	18 to 23	15 to 21	18 to 20
Wisconsin	23 to 30	20 to 28	20 to 25
Kansas	18 to 25	18 to 24	18 to 22
North Dakota	20 to 35	20 to 28	20 to 26
Pennsylvania	15 to 25	15 to 22	15 to 20
Oklahoma	20 to 30	18 to 28	15 to 25
New York	18 to 30	18 to 25	18 to 25
New Jersea	16 to 22	15 to 20	14 to 18
Massachusetts	20 to 30	20 to 25	18 to 24
Vermont	22 to 30	20 to 26	20 to 22
Connecticut	20 to 30	18 to 26	16 to 22
Maine	25 to 30	24 to 27	23 to 25

EVERGREENS IN IOWA.

Seymour G. Platt, Oelwein, Iowa, in Iowa State Register and Farmer.

The evergreen, as its name implies, is the tree for all the year around. It does not serve us for but a part of the year like the fruit tree, nor like other deciduous trees which are stripped of their foliage after the killing frosts of autumn have made their first few visits. The evergreen remains through frost and snows to break the fierce attacks of the western winter winds. Who has not observed what a protection in the coldest windy days of winter a well-grown evergreen windbreak affords?

It is surprising that in a prairie state like Iowa not more evergreen windbreaks are planted. The climate, the soil, the moisture and all the essentials for evergreen growing are found here. However, close attention and hard labor must be combined with nature to secure desirable results. Since we can not place the blame upon nature for our failures in growing evergreens, we must find someone else that is culpable. The three reasons for so few successful windbreaks may be these: First, a large number of Iowa farms are rented; second, a great many farmers have not been educated to appreciate the value of windbreaks, and, third, the farmers who set out evergreens often fail to give them proper care at the right time.

Too many farm owners, who rent their farms, say that it does not pay to set out evergreens because the renters will not take care of them. If they but knew how much a windbreak adds to the value of a farm, simply as a protection and an ornament, they would be very willing to set the trees themselves and care for them.

There are many farmers who do not know the use and the value of trees. They know that trees will break the wind, that trees around farm buildings will keep them warmer than buildings in the open, and that trees make lumber and firewood. Few understand the influence of trees upon the evaporation or the cultivation of moisture, or the influence on temperature in the time of cold winds of winter and hot and dry winds of summer. No one can fully appreciate the value of trees unless he understands the scientific problems in which they are involved. If these reasons are not valid as to why there are not more windbreaks in Iowa, there is still a greater reason, and that is found in the lack of care and attention after the trees have been planted. A man may buy the best grade of evergreens, set them in his richest soil and fence out the poultry and stock, but if his efforts end there his success is in danger. In the busy rush with farm crops the farmer too often neglects mulching his evergreens and watering them in dry seasons. 'Tis only a little work if done at the proper time that will insure success provided the rest of the work has been carefully done.

The kind of trees is the question that troubles many, while others barely give it a second thought. Most buyers want a tree that will grow fast and will give quick returns on the investment, and they do not stop to think that the fast-growing tree is the shortest lived and usually of the poorest quality. For quick growing trees which will do well on coarse and gravelly soils the Scotch pine can be recommended. It reaches a height of 25 to 30 feet in from ten to fifteen years, according to the kind of soil and the amount of moisture. At maturity it is a coarse, open tree with crooked trunk and irregular branches. It should be planted with other higher growing trees so that after these have grown large enough the Scotch pine may be cut out. The Austrian pine is a more valuable tree, because it is more regular and straighter in its habit of growth and equally as hardy. Its color is a darker green and the leaves are longer.

Perhaps the two most common and most largely planted evergreens in this State are the white pine and the Norway spruce. Both are long lived trees, very hardy and sturdy growers in proper conditions. The white pine is considered among the best of windbreak trees because of its density of foliage, its height and symmetry. It branches low and is wide spreading, making a solid, compact windbreak. The Norway spruce, while not so long lived, perhaps is more hardy when young and not so tender rooted.

It is quite good as an ornamental tree owing to its regularity of branches which gives it a symmetrical form. The white spruce is a tree of good quality, since it branches low, close and even. The arborvitæ, flat-leaved tree is used in windbreaks to some extent with taller growing trees. It does very well in low, wet, heavy soils. It is largely used in hedges because it stands severe pruning and fills out well. For ornamental lawn trees the Silver fir and the Colorado blue spruce are among the best. Their bright, fresh, green foliage makes them cheerful and attractive. There are many other varieties of good qualities, but these named are among the best and will serve for all general purposes on the Iowa farm.

Having decided upon the kind of evergreens that best suit his condition, the farmer should next have a knowledge of the best methods of setting the trees, and how to care for them afterward. In all cases it is best to prepare the ground before the evergreens are delivered at the farm. For windbreaks the land should be well plowed and then furrows made for the rows. Furrowing is not practical for trees under two feet high, but for larger trees it facilitates the work of digging the holes. By all means have the rows straight and even. The trees should be set a few inches deeper than in the nursery. Give the roots plenty of room and be sure to firm the soil about them. If the earth is dry give each tree a half pail of water after the first few shovelfuls of dirt have been packed about the roots. One precaution in setting evergreens is to expose but one at a time. Do not string them out like a row of fence posts and then plant them afterwards, but get the tree into the ground as soon as possible after taking from the packing in which the trees were shipped.

The best method, and the one most usually followed, is to raise potatoes, corn or other annual crops along with the evergreens until they have reached a considerable size. The advantage of this method is that the ground between the rows does not go to waste, and at the same time the evergreens get the necessary cultivation. Another plan quite often followed is to mulch the trees heavily with straw or coarse manure. This has a tendency to make the trees shallow-rooted, for they will not send their roots downward, as they do when frequently cultivated.

Either of these plans worked out alone will not give the best results. Cultivate in the growing season of early summer and after the drier weather comes on. Give the trees a heavy mulching. During the first years evergreens need water if there are not good rains every two weeks. Water when they need it and give them plenty. The best time for watering is late in the afternoon or evening.

With good trees to start with, rich soil and plenty of rainfall, and then a little hard work and careful thinking, the Iowa farmer can have a windbreak of which any man may well be proud.

DOES IT PAY TO SPRAY?

By Prof. S. A. Beach, Iowa State Register and Farmer.

In answer to this question we invite our readers to read carefully the accompanying report of an experiment in spraying apples conducted by Prof. S. A. Beach of Ames the past season:

The work was done at the Trigg orchard, located at Rockford, Floyd county. There are 2,900 trees in this orchard. They were planted in 1895 and 1896, which makes them now ten and eleven years old. They are mostly of the Wealthy and Patten Greening varieties. In 1905 the Patten Greening bore a good crop and perhaps for this reason they did not set very much fruit last season. So far as can be determined the crop of Wealthy in 1905 was largely destroyed by the scab fungus. In 1905 the Wealthy set considerably more fruit than the Patten Greening, but not a good crop. The average yield for the orchard was less than one-fifth bushel per tree, while in one of the plots under experiment the yield averaged two bushels per tree. Had the entire orchard yielded proportionately as much as this experiment plot it would have produced over 5,000 bushels instead of less than 500. This would have made the spraying much more profitable, for the cost of spraying the whole crop would have been but little greater than the cost of spraying the small crop which the orchard produced.

The entire orchard was sprayed with the exception of the plots of trees called I and IV, which were located in a portion of the orchard where there appeared to be the best prospect for a good crop of fruit. Each of these plots contained fifteen trees. Plot I contained six Patten Greening and nine Wealthy trees. Plot IV contained three Patten Greening and twelve Wealthy trees. The corresponding sprayed plots were numbered II, III and V. Plot II lay immediately south of plot I and contained likewise six Patten Greening and nine Wealthy trees. Plot III lay immediately north and plot V immediately south of plot IV. Like plot IV, they each contained three Patten Greening and twelve Wealthy trees.

The first spraying was given just before the blossoms opened, the second just after the blossoms fell, and the third from June 21st to June 25th. About the first of August the fourth spraying was made to combat the second brood of the codlin moth. The materials used were Bordeaux mixture, paris green and arsenate of lead. All of the trees except the checks were sprayed each time except at the last treatment, when only those having more than a hatful of apples were sprayed.

TOTAL YIELDS COMPARED.

Taking into account all grades of fruit, a comparison of the sprayed plats with unsprayed plats shows in every case a decided increase in the total yield of the sprayed trees. A comparison of plot I and plot II shows that the yield of the sprayed Patten Greening was 164 per cent tha the unsprayed, and the yield of the sprayed Wealthy was 123 per cent that of the corresponding unsprayed Wealthy. When the unsprayed plat IV is likewise compared with the corresponding sprayed plats III and V it is seen that the yield of the sprayed Patten Greening is respectively 422 per cent and 255 per cent that of the unsprayed, while the yield of the sprayed Wealthy is respectively 546 per cent and 653 per cent of that of the unsprayed Wealthy. In other words, sprayed Wealthy yielded in one case five and one-half times as much, in another case six and one-half times as much, and in the third case twelve and one-half times as much as the corresponding unsprayed Wealthy, while sprayed Patten Greening yielded one and one-half, two and one-half and four and one-half times as much, respectively, as the corresponding unsprayed Patten Greening. The total yield of both Patten Greening and Wealthy fruit is shown in the following table:

GRAND TOTAL PATTEN GREENING AND WEALTHY.

PLAT	YIELD BUSH.	PER CENT.
Plat I, unsprayed	5.75	100
Plat II, sprayed	23.33	406
Plat III, sprayed	28.06	529
Plat IV, unsprayed	5.31	100
Plat V, sprayed	28.5	537

The total yield of sprayed plat II is 406 per cent of that of the corresponding unsprayed plat; the yield of sprayed plat III is 529 per cent and that of sprayed plat V is 537 per cent of that of the corresponding unsprayed plat.

GRADES OF FRUIT COMPARED.

But the benefits of the treatment were not confined to increasing the yield. Not only was there more fruit and finer fruit where the trees were sprayed, but the fruit hung to the trees better. The amount and percentage of dropped and picked fruit are set forth in the following statement. The fruit was not graded into firsts and seconds, but the great superiority of the sprayed fruit over corresponding grades of the unsprayed fruit was apparent to everyone who examined the crop.

PATTEN GREENING.

YIELD OF PATTEN GREENING AND WEALTHY UNDER EXPERIMENT IN THE TRIGG ORCHARD.

Plat	Number of trees	Yield				
		Bushels			Per Cent	
		Dropped	Picked	Total	Dropped	Picked
Plat I, unsprayed	6	2.	2.5	4.5	44.4	55.6
Plat II, sprayed	6	2.87	4.5	7.37	38.9	61.1
Plat III, sprayed	3	1.8	5.75	7.55	23.8	76.2
Plat IV, unsprayed	3	1.12	.43	1.55	72.3	27.7
Plat V, sprayed	3	1.75	2.25	4.	43.8	56.2
WEALTHY						
Plat I, unsprayed	9	.68	.56	1.25	54.4	45.6
Plat II, sprayed	9	8.41	7.5	15.91	52.9	47.1
Plat III, sprayed	12	12.5	8.	20.5	61.0	39.0
Plat IV, unsprayed	12	3.	.75	3.75	80.0	20.0
Plat V, sprayed	12	16.5	.8	24.5	67.3	32.7

In every instance the percentage of dropped fruit was greater on the unsprayed plats than it was on the corresponding sprayed plats. This difference at least in the case of Wealthy from plats I and II, where it amounted to only one and one-half bushels in a hundred, but Wealthy in plats IV and V showed a difference of about thirteen bushels in a hundred and in plats IV and III a difference of nineteen bushels in a hundred in favor of sprayed fruit. Patten Greening showed a difference in plats I and II of five bushels, in plats IV and V of twenty-eight and one-half bushels and in plats IV and III of forty-eight and one-half bushels in a hundred in favor of the sprayed fruit.

Note that these comparisons have no reference to the relative amounts of the yield of the different plats, but refer to the percentages of picked and dropped fruit in the total yields regardless of the amount of that yield.

It is interesting to observe in this connection that the Patten Greening fruit hung to the trees much better than did the fruit of the Wealthy. In plat III, which was sprayed, Wealthy showed 61 per cent of dropped fruit, while Patten Greening showed 24 per cent. In plat IV, which was unsprayed, the percentage of dropped Patten Greening rose to 72 per cent and that of Wealthy to 80 per cent. The highest percentage of dropped fruit on any of the sprayed plats was found in plat V, where 44 per cent of the Patten Greening and 67 per cent of the Wealthy dropped. This leads me to raise the question whether it would not be a good practice in handling varieties like the Wealthy and Patten Greening to make at least two pickings, one when the earliest ripening fruit first reaches marketable condition and the other when the most of the later ripening fruit is in prime condition. I am of the opinion that in large commercial orchards of these varieties it would pay to make at least two pickings.

A study of this experiment leads to the following conclusions:

First—Where an orchard is badly infested with the apple scab and has not been previously sprayed it should have two thorough treatments before the blossoms open instead of one, the first to be given when the green tips of the leaves first push through the bud scales, the second just before the blossoms open.

Second—It is best to make the treatments very thorough and timely.

Third—In Iowa it pays to spray for the second brood of the codlin moth.

Besides the two treatments which should be given before the blossoms open as indicated above, the control of scab and codlin moth requires that the orchard be sprayed just after the blossoms fall and again in from ten to fourteen days. The season's spraying operations will then include the following line of treatment:

1. When the leaf buds are opening.
2. Just before blooming.
3. Just after blooming.
4. About two weeks after the third treatment.
5. The last of July or first of August.

In all of this work it is best to use liquid Bordeaux mixture with paris green or some other effective poison.

HORTICULTURE.

Mr. Buffin, Estherville, Iowa, before Dickinson County Farmers' Institute.

Volumes have been written on this topic and still it is not exhausted. It ranks second to none, save, perhaps, agriculture, of which it is practically a branch.

We, in our county, are practically on the horizon of fruit growing. We have just begun to see victory ahead. Thirty years ago some of our early settlers from the east were determined to have their own fruit and to many of these we are indebted for many valuable lessons both in failures to be avoided and success to be made use of.

Listen to them for a moment. They will tell you of their trials, of the ravages of prairie fires, of deep snows and of the jack rabbits eating the tops off the trees, of their blasted hopes when, after years of care and labor, their trees turned out, in many instances, to be of worthless sorts, often resulting from dealing with fake tree agents and sometimes in using poor judgment in selecting.

Coming down to the present, we are situated in one of the best counties of northwestern Iowa for growing apples. If you will consider, acre for acre, we have no crops that pays better returns than our apple orchard, considering the amount of labor expended. Add to this the care and management used in the east and what are our possibilities?

We don't grow apples here. We plant a tree and let it take care of itself and expect a crop. Our friends in southern Iowa, Missouri and all of the other apple-growing states are fighting the enemy of the apples with profit.

It has been repeatedly said by several different persons that the apple exhibit at your state fair last fall was far superior to that at the Minnesota state fair. I believe that our lakes have something to do with our fruit growing; that is, I believe many varieties can be grown near these that cannot be made a success 15 or 20 miles from them on open prairie.

It is well known that there is a location southwest of Minneapolis, near Lake Minnetonka, that almost any kind of fruit that will grow in Iowa will succeed, and I believe that the conditions are similar here around our lakes and streams. I once asked Prof. Budd of Ames what he thought of our county for growing apples and he replied something like this:

"I believe there is no better place in Iowa to grow fine apples of high color than along the banks of the Little Sioux and in the vicinity of the lakes of Dickinson county, of such varieties as are adapted to your climate."

From what I see and have learned from actual planting I am convinced that no one need be alarmed if his land is level or nearly so if well drained. However, I would prefer rolling, if handy. I would not want to plant on land with any appearance of alkali or blue clay near the surface. This is found in places in the southern part of the county. Land that will grow good corn will grow good apples or other fruit.

Plant with a view to the future. Aim high. It is no disgrace if you do not quite reach the mark. If you wish to plant thick plant your trees thicker in the rows north and south. But leave room east and west for plowing and working the soil the first few years to some other crop. This will give you room to get through some day to spray your trees and room to drive out with your load of apples.

Trees planted about 16 by 24 is about right to my mind. Plant less crabs and more of something salable. I find I have something like 60 sorts in my orchard, which is about 57 or 58 too many for profit. It pays to take pains in planting. Mark off your ground, get your rows marked out straight so it will not make you cross eyed to cultivate along the row.

Dig a good-sized hole and when you think you have done it about right get down in the hole and spade it up a spade depth deeper. This will loosen the earth so new roots will penetrate to moisture. Plant the tree as soon as the hole is dug, while the earth is yet moist, and it will need no watering.

Always keep the roots moist. Stand your tree up in the hole, leaning to the one o'clock sun, and work fine moist earth in among the roots. Fill in till the hole is nearly full, then tramp with the feet till the ground is very firm. Then fill up till level and leave loose. Planted in this way they will need no watering; 99 per cent or better should grow.

It is well to trim the top back at planting time. Know what you are planting. If for family use you may plant several sorts, but if for market plant such as there will be a demand for.

Our fruit crop last fall taught many lessons. About the time the Duchess apples were maturing I looked into the market question somewhat and wrote some commission houses that there were some surplus apples at Milford. They requested to know when the fruit would be ready to ship and as a result a commission man from Mason City, Duluth and two from Minneapolis were on the ground on short notice. Likewise when the Wealthy were ready buyers were plentiful.

A cold storage firm in Kansas wrote me to know if I could furnish them twelve carloads of Wealthy at a good figure. The only requirements were that they had been sprayed and were sound fruit.

Here is a hint to our local storage plant. Get busy next time and store the best fruit.

I understand two or three carloads of Spirit Lake Wealthy apples are in storage at Mason City at the present time. These ought to be here. I think we should look into the matter of spraying more thoroughly.

I am satisfied we have got to come to it and that if properly done it will pay a large dividend. I found a great difference in my trees that were sprayed last season. I am not an agent nor have no axe to grind for any spray company, but think it is a mistake for the average farmer to attempt to mix his own spray. I find I get better results from the ready prepared mixtures.

Am sorry I cannot be at your institute and learn from your experiences along this line. I have only touched on a few lines in horticulture. Much might be said of other fruits and varieties, but I know well that the subject is in good hands when entrusted to Mr. Buffin.

THE IMPROVEMENT OF CORN THROUGH BREEDING.

By W. A. Hook in Iowa State Register and Farmer.

(This article was the first prize winner in the Iowa corn growers' contest, written from the viewpoint of the breeders).

The greatest improvement in our corn must come through increased yields as associated with better quality. The knowledge of this needed improvement is spreading rapidly through the agency of natural forces, chief among which is the continual increase in the price of our best corn lands, bringing with it higher rentals and taxes, causing the corn grower and breeder alike to exert all their energy and skill to meet the new conditions.

The breeder, so far as he himself is concerned, will soon adapt himself to the change, but the average farmer must change his methods or else he will be compelled to give up corn growing to some other fellow who can, by his skill and good management, make the land pay a profit. It should be the purpose of every breeder to try to reach all those farmers in his community who are raising the low yields of corn. Some, of course, will not thank him for advice, but most of them will be ready and willing to grasp any new ideas that will help them in increasing the value of their crops. He should demonstrate by actual practice the value of intelligent methods and at harvest time show results that will convince the most skeptical.

To accomplish this end a breeding plot should be operated by the breeder and at harvest time a picnic planned in order to get a crowd of farmers together to see the results. In this plot should be planted several ears in separate rows. One of the highest yielding varieties should be used. The ears should all have been strong in vitality as shown by the germination test and should be uniform in appearance. The yields can then be noted and the need of careful selection of seed made apparent. Seed from the highest yielding rows should be planted in the general field the following year, while the best ears of the same rows should be kept for the breeding plot. If a part of the parent ears have been kept they will be of great help in comparing results. In this way the move toward better methods can be started and in a few years great good will be accomplished.

After the corn is harvested and the results recorded the seed should be hung up under an open shed to dry. This should be done in the presence of the visitors and at the same time they should be instructed that, after a month's drying naturally, the corn should be stored in a dry place where it would be safe from the ravages of mice and rats. Impress on their minds that it should be the purpose of every corn grower to hang up more seed than is necessary to plant his crop. This method gives a chance to eliminate those ears that are undesirable, after a closer inspection has been made as to the depth and shape of the kernel or as to its germinating power.

A germination box should be ready for opening on this day so that a study of the method of testing each ear separately could be made. Most any average farmer could readily see that by numbering the ears to correspond with the squares in the box would be all that is necessary in obtaining the germinating power of each and every ear tested. Make plain to them that kernels from all sides of the ear should be tested and explain that a large box is not best for use in this work as the center of the box would not get enough air for strong, vigorous germination. A half hour's study of a box opened for inspection in this way would suffice to convince most any one of the need for testing his seed corn.

Another thing that the breeder should be instrumental in bringing about is a corn show at the nearest village. He can get the merchants, through the advertisement they will get, to donate the premiums. Do not give money premiums, but let the dealers donate some article that they handle and then average the premiums so the values will be in about the proportion of $5, $2.50, $1 and 50 cents. No definite number of classes need be represented, but make as many classes as your premiums will warrant. The main good that will come from a contest of this kind will be the education of farmers in the different varieties and the inspiration he will absorb by being thrown into contact with other growers who may or may not have better corn than himself. Always get an expert judge (from the State college if possible), to judge the corn and let him give a talk on corn. The picnic gathering and the corn show will work wonders in the improvement of corn during the next few years, and it is one of the main stimuli that urges each and every grower on to greater effort, resulting in permanent good to the community and to the nation at large.

No breeder can contribute to the permanent improvement of corn and follow the "scoop shovel" method in saving seed corn for future sale. Neither can he afford to sell it shelled, for corn that is not fit to be shown in the ear should never be planted for seed. Not more than 10 per cent of the crop should be kept for seed, depending somewhat on the season. No breeder should sell for seed any corn that he would not plant himself in his general field.

There should be a corn breeder in every community and it would not be long before there would follow systematic breeding for high yields practiced on many farms. I do not think that it is necessary for the breeder to go further than to breed for high yield of superior quality ustil he has enlisted a large share of his neighbors in the cause. Too many are chasing vague fancies in breeding for show qualities alone. I do not believe, from the results of my experiment plot this year, that high yield and show quality are in any way associated for this reason: My highest yielding row did not yield a single show ear, while the next highest yielder produced ten show ears on fifty-three hils. Two of the low yielding ears produced a like number of show ears, while the finest ear planted in the plot did not reproduce itself once.

Some breeders are breeding for high feeding values, but I believe that a large amount of the results thus accomplished are soon lost when corn is turned to other men for seed purposes. What the great need for improvement in corn, at the present time is, is not so much higher feeding value or greater show quality, but higher yields of mature corn, and the only way this can be accomplished is by enlisting the corn breeders in the work and through them reach the man who is raising the small yields. He is the farmer we must stimulate to greater effort if we expect to materially increase the average yields of corn in the corn belt.

Such then should be the purpose of every corn breeder and, while his methods might be dissimilar to those of other breeders, any system of breeding that will increase the yield of corn will be very beneficial to the community. The great good that will surely come to the breeder, who is devoting his life work for the benefit of his neighbor farmers, will not be that of financial gain, but will be that of the satisfaction of doing good for the benefit of others; and this result alone would well repay him for his work.

COST OF AN ACRE OF CORN.

From Illinois Farmers' Bulletin No. 10.

EACH ITEM OF PRODUCTION FIGURED OUT—SIMPLE AND PRACTICAL SYSTEM OF FARM BOOKKEEPING.

Joseph R. Fulkerson, of Hazel Dell Stock Farm, Jerseyville, Ill.

It is not always the man who knows the most who makes the greatest success, but the man who thinks. It is necessary to read, and as a rule the one who reads the most thinks the most. The day of haphazard farming by plenty of brawn and no brains has gone by. No two farms are exactly alike. Every farm is a separate and distinct problem, to be worked out by itself. So much depends upon the man.

LUMBER DEALER KNEW EVERY ITEM OF COST.

A man said the other day, "Lumber is high." But a lumber dealer replied that lumber had been too low and now simply had advanced along with pork, corn and wheat. He was able to tell to a penny the cost of the timber, the labor and freight rates; what it cost him to haul and skid the logs; to put them over the saw; to stack and load the lumber and to deliver it to the market; and what per cent of culls had to be reckoned upon. That was a man who thinks. He knew exactly what it cost to produce the lumber he was selling.

I wonder if a boy here knows what it cost per acre for seed corn last year; what it cost to plow the ground, to work it down, to cultivate it; and what, from a previous record, will be the probable cost to husk and deliver this corn. It is necessary that the farmer keep accounts and know the cost of production, that he may be able to figure out methods of cheaper production. The man who finds that there is "no money in farming" and says, "I'm going to quit," doesn't think or he doesn't keep accounts.

FINDING THE COST PER DAY OF MAN AND TEAM

We will first study what a man and team are worth per day. There are four Sundays in a month and probably two other days on which the man will not work. It took me three years to figure out the cost of a horse's work. I found that the average price of farm horses was $125.00, and figured that they were good for ten years' work, and worth $50.00 when 15 years old. You know what corn, oats and hay you feed the horses. I gave them the usual amount of hay and then took it out of the mangers and weighed it. A certain amount must be counted for the horses' feed in the stalk field or the pasture. In Massachusetts or Pennsylvania the cost of the horse is figured at 40 to 50 cents a day. Here the horse costs about one-half of that, as horses, feed and pasture are cheaper. The horse includes the use of the harness and the repair bills. I found that it cost 22 cents a day to keep a horse and figured the man at $1.35—$1.80 per day for man and team. That is the cost to us. It may cost more or less upon other farms and under other conditions. It is almost impossible to get the exact cost, but if we make an effort to do so we will come a great deal nearer to it than by guessing.

ADDING UP EVERY ITEM OF LABOR.

We keep a work book at Hazel Dell farm. It takes but five or ten minutes to write it up every evening. This diary gives the name of each man who worked and states the kind of work, how long he worked and in what field. Here is a sample record:

"John Jackson cultivated corn, field number 3, second time over, two horses, half day; started binder and cut wheat in field number 5. three horses, half day."

By running over this book at the end of the season we can easily get the number of days spent in working each field and with the price per man and per horse, can figure the cost of the crop grown in that field. There is certain labor on the farm which must be charged to the place as a general expense, and not per acre to any crop. For instance, a forty-acre field of corn may have four sides fenced. This fence is not for the benefit of the corn, but for the purpose of keeping live stock, and it should be charged to the live stock. We found it was more expensive to rake and burn stalks than it was to disk the land.

COST OF PRODUCING ONE ACRE OF CORN.

We have found, by the careful figuring of every item, the average cost for three years of growing an acre of corn, as follows:

Work with the stalks	$ .12
Plowing	.80
Working the ground	.60
Planting	.18
Seed	.15
Cultivating	1.07
Husking	1.72
Wear and repair	.40
Total	$5.04
Credit to stalk-field	.60
Net cost of one acre of corn	$4.44

These accounts, kept similarly, will vary in different sections of the State, as the cost of labor varies, the average being higher in the northern and lowed in the southern part. We never haul an ear of corn to market and so I have put in nothing for marketing the corn. Another three years the cost might vary somewhat from the above, but not very much. We must have land upon which to grow corn and should figure rent or interest upon this investment, in addition to the above labor. But do not put this too high. The safer investment always bears a low rate of interest.

Similar figures for a crop of wheat are as follows:

Plowing	$ .78
Working the ground	.94
Seed	.87
Drilling	.19
Harvesting	.77
Wear and repair	.34
Threshing	2.48
Total	$6.37
Credit the stubble-field	.25
Net cost of one acre of wheat	$6.12

MANNER OF KEEPING THE FEED BOOK.

To get at the cost of making beef and pork a feed book is kept. It is written up every Saturday night and shows the average amount and kind of feed consumed by each bunch of live stock and the number of animals in each bunch during the week. From this we can figure very close to the cost of the animals at marketing time. Following is a sample record from this book:

"Fifty-six steers were on grass in east pasture, getting sixteen baskets of broken corn per day. Two milk cows and nine with eleven calves in lot and upper pasture; five ears each twice a day to the milk cows."

When the steers are fed the corn is weighed in the bulk and figured at seventy pounds to the bushel.

THE DAY BOOK AND ITS ENTRIES.

Our object in farm bookkeeping is to get the business record in such shape that it will be simple, condensed and plain. We want to do the minimum of writing and yet have the ledger show every transaction at a glance without referring to several other books. We use simply a day book and ledger of the single entry *form* kept by the double entry *system.*

Our day book is a "counter book," or "order book," for writing with pencil, and costs but 5 or 10 cents. The day's transactions should be recorded every evening, and for this it is not necessary to get pen and ink, or even to wash one's hands. When convenient, the oftener the better, these items should be posted to their proper accounts in the ledger. Following are some samples of the day book entries:

March.

6	Sold to Jas. Wilson—		
	12 fat shoats, 10 months old; average 236 @ $5.90; check deposited	167	08
7	Gave John Allen—		
	Check for 257 bushels corn @ 40c	102	80
	3 calves @ $10.00	30	00
	Amount of check	132	80
10	Sold Wm. Barton—		
	Team of horses—Jim and Molly—to be paid in corn. 1,000 bushels @ 40c	400	00
16	Wm. Barton delivered—		
	1,008 bushels corn @ 40c	403	20
	J. R. F. paid him cash to balance account	3	20

The Above Accounts Transferred to the Ledger.

CASH

1906 March	6	To hogs—12 shoats to Wilson; 236 @ $5.90	167	08		
	7	By corn—257 bushels of Allen @ 40c			102	80
	7	By cattle—3 calves of Allen @ $10.00			30	00

CATTLE.

1906 March	7	To cash—3 calves of Allen @ $10.00	30	00		

CORN.

1906 March	7	To cash—257 bushels of Allen @ 40c	102	80		
	16	Horses—1,000 bushels of Barton @ 40c	400	00		
	16	To J. R. F.—8 bushels of Barton @ 40c	3	20		

HOGS.

1906 March	6	By cash—12 shoats to Wilson; 236 @ $5.90			167	08

HORSES.

1906 March	16	By corn—1,000 bushels received of Barton—"Jim & Molly"	400	00		

J. R. FULKERSON.

1906 March	16	By corn—Paid Barton for 8 bushels extra on horse trade			3	20

WHAT THESE ENTRIES MEAN.

The third item of the above day book entries (March 10) is simply a memorandum of the trade that was made, and does not appear on the ledger until the transaction is completed (March 16). As you will see, every item on the ledger shows exactly what it is the moment you open the book, without referring to the day book, while the ordinary double entry form is not much more than an index referring to the pages of the day book for the real account of the transaction.

In addition to the ledger accounts here given, a separate record is kept of the oats, wheat, hay, chickens and labor, as well as the accounts of any merchant or other business man dealt with.

NO LEDGER ACCOUNT WITH INDIVIDUAL LABORERS.

All bills and labor accounts are paid in checks payable to order, thus saving inconvenience or trouble is case a check is lost, and making it unnecessary to take a receipt.

All labor is paid every Saturday night, the time being taken directly from the work book. This saves keeping the ledger account with every hired man, and no misunderstanding can arise as to the number of days' work.

ANNUAL INVENTORY.

On Feb. 1 of each year we pay all outstanding bills and make an effort to settle with every person having an account with us. We measure all hay, corn and other grain on hand and estimate its value according to the local market; estimate the value of horses, tools, machinery, etc.; weigh all cattle and hogs and figure them at city market prices, less freight. Brood sows, being heavy at this season, are not marketable, so are not weighed, but are listed at $15.00 each, regardless of the market. We think this a minimum price should we ever sell out entirely, and as we try to have the same number of brood sows on hand every spring, that item remains practically unchanged from year to year and does not affect the net results. Feb. 1 is chosen for this inventory because most merchants can have their bills ready at that time, and there are no growing crops except wheat. Everything on the farm is then in the most condensed form.

SWEET CORN CANNING IN IOWA.

Wallaces' Farmer.

A can of sweet corn is rather a prosaic and insignificant thing in itself, but the economic value of our corn canning industry runs up into the millions of dollars every year. It may be news to many that Iowa leads the Union in the production of canned sweet corn. The next time you open a can of "sugar corn" for corn oysters, corn fritters, escalloped corn, or some other delicious dish, it will perhaps add a bit of spice to this humble article of food if you know something of its "life history," in which some 200 or 300 people have a part. In the typical Iowa country village of Grimes is located a factory devoted to the sweet corn canning industry. The factory is up-to-date, successful, and may be taken as an example of the high-grade canneries of the state. This is a stock company and most of the stock is held in Grimes or by the farmers near Grimes, which makes the plant pretty much of a mutual affair. A description of the methods there employed, when supplemented with the views given herewith, gives one a very clear idea of the whole process.

In the spring the acreage is contracted for, the present price being $8 a ton net husked corn for Evergreen and $11 for Country Gentleman. About 700 acres is needed to keep the factory going properly during the canning season, and this season extends over three to five weeks, depending on the season. The acreage per farm varies from ninety acres for the largest patron down to small patches of two or three acres, but about twenty to thirty acres is found most profitable for the average grower. More than this necessitates too much hired help at harvest time in order to secure the crop in prime condition. Good seed is of vital importance and is hard to obtain on the general market. During recent patrons with choice seed at a nominal price. A few acres of corn is bought from several of the best sweet corn growers. The matured seed is carefully sorted and stored in heated rooms to prevent freezing, and in the spring resorted, the tips and butts shelled off, the ears tested, and only the best sold for seed. There is now no trouble with poor seed, but under the old plan where each man saved his own or bought it wherever he could there was each year a large acreage with weak stand or to be replanted because of poor seed. Sweet corn seed seems more susceptible to severe freezing than field corn. Under the best of conditions it does not sprout as readily nor grow as vigorously, hence the double importance of good seed. Rich, clean land gives the best results. In general, land that grows the best field corn grows the best sweet corn. The cultivation is practically the same, with the exception that an ideal seed bed is more important with sweet corn because of its slower and more delicate growth at first. It must be kept free from weeds at any cost to be profitable, and an extra plowing pays well. The planting is thick, about five stalks to a hill on the best land. The planting begins about the first of May and extends till about the 10th of June. This gives a succession of fields ripening in the fall and distributes the harvesting over three or four weeks.

The earliest fields are in choice roasting ear and ready for canning about the middle of August. The corn is snapped and hauled to the factory, where it is weighed and tested. The test consists of taking a measure of the snapped corn, husking out and weighing the ears suitable for canning, and thus determine the per cent of net husked corn in the load. A test of 75 to 80 is considered good, but this depends a great deal upon how close the corn is snapped and upon how carefully the corn is selected in the field. No matter at what season the harvesting is done, there is always a greater or less per cent of immature ears and ears that are past the best stage for canning. A careful snapper will leave most of these ears in the field, and they add a great deal to the feeding value of the fodder, besides saving unnecessary labor in snapping and handling. Where labor could be secured at a reasonable price it would no doubt pay to make two gatherings, but practically all the large growers make one gathering, as nearly as possible when the most ears are prime.

The general average yield is around two to two and one-half tons net per acre. On good land well farmed three to four tons is not uncommon, and ocasionally a field runs even higher. Three tons is considered a good crop. Besides this, the fodder is worth $1.00 to $1.50 in the field, or $3.00 cut and shocked, so in average years sweet corn is a paying crop; in fact, one of the best crops on the farm up to a certain limit.

The advantages of growing sweet corn are that it is a profitable cash crop; it distributes the work of corn gathering over the fall; it produces a large amount of high-grade fodder, stock preferring it to field corn or sorghum; the stubble field makes an ideal seed bed for winter wheat and permits of reasonably early planting. The closer the fields to the factory the more profitable the crop, because the gathering and hauling are big items of expense. Little is grown over three miles out, and practically none over five miles out. A good man in heavy corn can snap and haul three to four tons close in per day, while two to three tons is good work out a couple of miles. A man with team is paid $1.35 a net ton for close work and $1.50 for a mile or two out.

The snapped corn is scooped from the wagons into both sides of the long open husking shed and twenty or thirty wagons unloading and waiting at one time is a common sight. The husking is mostly done by women and children, who receive three cents a bushel for the work. An extra good husker can husk fifty bushels a day, but most of them run around twenty-five to forty. The husked corn is dumped into a long conveyor, which is simply a long open box with an endless belt in the bottom and running the full length of the shed. Another carrier takes the corn from the conveyor to the cutting machines on the third floor of the factory. Along this conveyor are stationed ten to fourteen sorters, depending on the quality of the corn coming in, whose duty it is to pick out any ears not strictly choice, and very little else gets past the sharp eyes and nimble fingers of these sorters. Some factories are not so particular about sorting and use only a few hands at the conveyor, hence their output is nearly all one grade. After the choicest corn has been "run up," the balance is again dumped on the conveyor and resorted. The ears unfit for canning are thrown out into a refuse pile which is sold back to the growers at $1.00 a load and makes a cheap feed for stock. All the corn that is a little too green or too hard or otherwise not suitable for the choicest grade is then run up into "seconds" and sold at a lower price than the choicest "firsts." These "seconds" are handled chiefly by grocers whose trade demands cheap goods and also to feature as "bargains" for the benefit of the well-meaning but sometimes short-sighted bargain hunter. Take it from us, dear reader, the best is the cheapest in canned goods; don't buy any "bargains" in cheap foodstuffs of any kind unless you absolutely know you are getting a high-grade article.

The husks are raked into another conveyor and carried out to the husk pile. Patrons are permitted to haul away all the husks they wish free of charge and the balance is stacked into a huge pile. This pile heats and silos nicely, and except for a foot or so spoiling on the outside, it comes out green and sweet ensilage in the winter and sells readily to dairymen at $1.00 a load.

The husked corn as it is carried up to the cutting machines is washed by a spray of water and then dumped into chutes over the cutters. A girl at each side of the machines, which are fitted with a double set of knives, feeds the corn into the knives. These knives are set to cut the kernel about through the middle and the ear is then forced between scrapers that scrape out the pulp and leave the indigestible hull on the cob. The trade demands a kernel that is visible but small, not too green and not overripe. The cobs are carried out to the cob dump and hauled off in manure spreaders and scattered on the fields for fertilizers, and some of the patrons haul them back for feeding purposes.

After leaving the cutting machines the work of canning is nearly automatic. The cut corn drops through a chute to the second floor and passes through the "silker," a machine that takes out the silks and tiny strips of husks and also strains out the tips of ears, pieces of cob, etc.

From the silking machine it passes to the mixer, where it is mixed with the "syrup," composed of granulated sugar, salt and water. This mixing is done automatically and with absolute accuracy. Some folks have the impression that some sort of an acid or preserving compound is used to keep the corn sweet in the cans, but this is not true. The "syrup" simply flavors the product and adds plumpness or tone to wilted kernels. The cooking is the real secret of preservation.

From the mixer the corn goes to the preliminary cooker, where it is raised to a temperature of 175 degrees, which is as hot as can be used and make the solder on the caps work. This first cooking is really a process of primary sterilization. The corn is then automatically filled into the cans, which are capped by hand, soldered and tipped by machinery, and stacked into open steel baskets that hold 1,000 cans each. The filled baskets are then conveyed to the cooking retorts, where the sealed cans are steam cooked for about one hour at a temperature of 250 degrees. This cooking is a very important process. The heat must be kept steady and the cooking stopped promptly at the proper time or a low-grade product results. Overcooking makes brown corn and undercooking would promote spoilage. The only reason the factory can put up corn that keeps and the housewife can't is simply because she is not equipped to maintain the corn at the high temperature necessary to perfect keeping. The whole secret of perfect keeping nicely flavored corn is proper cooking and the right amount of syrup.

From the cooking retorts the filled baskets pass through a long cooling tank into the store room and the cans are filled into cases and stored. After the season is over the cans are labeled and packed into cases ready for shipment. This work is usually done as the stock is shipped so the labels are fresh and clean and also to save extra handling. The finished product wholesales at 50 to 65 cents per dozen cans. There is a fair margin of profit in the latter figure, but none for high-grade goods at the former price. The market is vast, but in recent years the demand has not been equal to the supply and many small factories have been closed on account of low prices. New markets and an increased demand have this year advanced prices to a point where most of the factories are making money.

Nearly every small town is sooner or later enthused with the possibilities of a canning factory, but an enterprise of this magnitude cannot be successful at every point. First it requires heavy financial backing. Take the Grimes factory, for instance. This is a two-line factory; that is, there are two complete sets of machines in the mixing, filling and soldering departments. The plant and machinery represent an expenditure of over $35,000. A good season means an output of a million to a million and a half cans, this year about one and one-third millions. The can bill alone is over $20,000. Cases represent $6,000 more, labels $2,500, raw product $16,000. The pay roll during the season is $6,000, besides the salaries of the superintendent and the regular employes during the year and extras during the shipping season. Add to this insurance, interest on investment, repairs and incidentals, and it requires nearly $100,000 to swing the enterprise. A one-line plant would require more than half as much, because each additional line does not double the expense of investment, pay roll, etc., but does double the capacity of the plant.

Sufficient acreage for a full season's run must be assured; the financial success of the business depends upon a large output, since the margin of profit is small. There are not many mixed canning factories in Iowa, because the Iowa farmer and his high-priced hired man do not take kindly to raising tomatoes, peas, beans and other truck. Sweet corn must be the main canning crop in most localities, perhaps supplemented in a small way by some of the other canned products. The hearty co-operation of the growers is vitally essential.

Careful management and efficient and abundant labor is essential. The Grimes factory employs 200 to 300 hands, and that in a small town means a lot of folks for a month's business each year. Here the farmers' families and the townsfolk all turn out and earn spending money and money for school supplies and winter clothes. It is "fashionable" to work at the factory, and young and old lend a willing hand. Wages vary from 10 to 40 cents an hour for time work, depending on the work, and the piece workers are paid good wages. This factory has been operating five years and the school children and dozens of others look forward each year to the "run" to earn a tidy sum. School begins when the "run" is over. Not every town will give a canning factory that kind of support. There is always employment outside the "run" for a few steady hands in making up boxes, labeling, shipping, unloading crates and cans, repairing, and other odd jobs.

THE CARE OF FARM MACHINERY.

H. M. Bainer, Colorado Agricultural College, in Wallaces' Farmer.

There is perhaps no other source of loss so great to the average farmer as that produced by lack of the proper care of farm machinery. As a general rule, the prosperity of a farmer may be estimated by the way he cares for his machinery. Poor care indicates shiftlessness, waste, lack of energy, and that the owner must necessarily buy more tools and implements in a short time. Good care, on the other hand, indicates prosperity, development, bank deposits and the buying of less machinery.

The American farmer buys annually $100,000,000 worth of farm machinery. According to statements made by different manufacturing companies, the farmer would not have to buy over one-half this amount of machinery, provided it received the proper care. A season without shelter detracts more from the value of farm machinery than the wear caused by its use during the same season.

Every owner of farm machinery should be able to understand and properly adjust it. Every implement should be looked over carefully before it is used, to see that all bolts are tightened and all moving parts work freely.

Moving parts on new machinery frequently run hard on account of paint in the bearings. This paint can be easily removed by the use of kerosene or one-half kerosene and one-half machine oil mixed. New machinery should be carefully examined every day, as bolts often work loose or boxes may fit too tightly, causing them to heat. When the work with a certain machine has been finished it should be thoroughly cleaned and all parts that are liable to rust should be carefully wiped with an oiled rag or waste. They should then be stored in a shed of some kind, rather than left in the corner of a field or under a tree where the chickens roost on them.

With good care and housing an ordinary grain binder on the average 160-acre grain farm will last from twelve to sixteen years. In comparison with this, a binder doing no more work, without extra care or housing, will last but from five to eight years. Records show that many farmers have kept their tools in constant use by good care for more than twice the average life of the machine.

We will assume that a farmer starts in farming with $1,000 invested in new machinery and that if sheltered and well cared for it will last ten years and if not sheltered only five years. If the implements stand out in the weather it will cost another $1,000 to replace them at the end of five years. The compound interest on this amount for five years at 5 per cent amounts to $276.28, or the total amount of money paid out for machinery with its interest amounts to $1,276.28.

A good tool shed large enough for this machinery can be built for $200. The compound interest on this amount for ten years at 5 per cent equals $125.60, or the shed may be considered to have cost $325.60 at the end of ten years. After paying for the shed it leaves us at the end of the ten years a balance of $950.68 in favor of housing the machinery, and the shed is perhaps good for ten years more use.

THE COST OF HOUSING FARM MACHINERY.

Wallaces' Farmer.

E. A. White, in the Illinois Agriculturist, gives some interesting figures on housing farm machinery, as follows:

"On the average farm we will usually find the following tools:

Three gang plows	$ 60	$ 180
One walking plow	16	16
One 20-foot harrow	22	22
One roller	25	25
One disk harrow	30	30
One disk drill	80	80
One corn planter	40	40
Three two-row cultivators	40	120
One mower	43	43
One hay rake	25	25
One side delivery rake	50	50
One hay loader	50	50
One binder (8 feet)	125	125
One manure spreader	120	120
Three wagons	70	210
One hay rack	20	20
One double carriage	135	135
Two single carriages	100	200
One cart	25	25
Total		$1,516

"The machinery necessary to operate the average farm successfully costs about $1,516. A shed 70x30 feet would house every tool in the above list. Building the shed without a floor, setting the posts in cement blocks one foot square, and putting doors on both sides, would cost $492.60, or, in round numbers, $500.

"The question simply resolves itself into this query of farm economics: Is it cheaper to have $1,516 worth of necessary machinery in a shed worth $500 or leave it exposed to the deteriorating action of the weather? We will assume that the shed will last fifty years, which is not unreasonable, and will have to be painted five times during that period. We will also allow $300 for new roofs and other repairs. Our expenses per year would then be as follows:

Interest on $500, at 5 per cent	$25.00
Depreciation of shed	10.00
Painting	2.50
Roofing and other repairs	6.00
Total	$43.50

"For $43.50 per year $1,516 worth of machinery can be housed. If these machines are left out of doors they will depreciate 10 per cent (and that is putting it mildly) of their value per year, or $151.60. It is thus readily seen that it is neater, cheaper, more convenient and more business-like in every respect to build a machinery shed and then see that the tools are put inside when not in use. Simply by having the shed to house the machinery we are making a great saving, namely, the difference between $151.60 and $43.50, or $108.10. A paying proposition, to say the least."

SCALES ON THE FARM.

Breeders' Gazette.

Guesswork has cost farmers a deal of money. Years ago it was a pardonable business breach; it is not today. In the experimental stage of farm scales, when these inventions were very costly and the necessity of conducting farming operations on a strictly economic basis was little appreciated, the sale of live stock and farm produce at guessed weights was among the unavoidable evils. Experienced buyers with eyes trained in the calculation of animal avoirdupois almost invariably had the better of sellers. Usually the buyer greatly underestimated weights and the seller went to a similar extreme in the other direction, with the result that in effecting a compromise large advantages quite uniformly accrued to the clever buyer. Many a farmer, for example, has sold hogs at guessed weights and the next day been humiliated to learn that the buyer sold them off the scales at advances ranging from 20 to 50 pounds per head. It is singular that while farmers esteem themselves highly as guessers of the weights of farm animals, and many times seem more interested in their heft than in breed character or perfection of feeder type, their cocksure estimates are often ridiculous when compared with the readings of the scale beam. It is not within the ability of the eye to measure the weight of a beast with sufficient accuracy to make the plan commercially prudent. While the eye of the master fattens his cattle, it is not to be relied on in fixing their weights for sale.

In an age that teems with perfected inventions designed to place farming on a business footing, any sort of guesswork in this field is inexcusable. Everything that the farmer sells by weight should be weighed on his own scales. Upon the facts furnished by them he can make accurate deals. If he has first-class farm scales he can swear by them, and their determinations will be respected by purchasers of his goods. Such scales are now within the reach of almost all farmers. Not to own one is an extravagance. Experience yields the emphatic verdict that business-like farming can not be conducted without them.

Economists who with breadth and balance interpret modern industrial developments and deduce principles with which to guide practice, agree that the largest net profits come from full equipments operated by skilled labor under wise direction. Farming is an exceedingly complex art. It therefore requires complexity of mechanical organization and equipment involving the use of those machines and devices which not only reduce labor but enhance its efficiency.

Like many other accessories useful to the farmer, scales may be classed as indispensable luxuries. They accompany and promote careful business methods in every department of agricultural activity. They are efficient means to exact ends. So important and definite are the results from their use that farmers rightly consider them investments. The classification is sound. An investment implies subsequent returns representing a fair rate of interest on the capital involved. Scales put to the dozens of uses within their sphere on any stock farm will in a short time wipe out their first cost and for years afterward pay a handsome usury on the original outlay. Any standard agricultural tool or machine after it pays for itself becomes an actual creator of net wealth. Scales will offset their cost about as quickly as any device used on the farm.

By increasing the equipment of the farm we increase its productive capacity and enlarge the possibilities of clear profit. Crudity in agriculture practices war against maximum returns. We can get along without certain machines and appliances, but we can augment profits by using them. Inadequate equipment may confer fair rewards, but a complete outfit will place the largest end in reach. From the most enlightened point of view, investments in those tools and devices which constitute a complete mechanical outfit for a farm are fundamentally sound. No outfit can be complete if it lack a standard farm scale. In the course of a year there are hundreds of questions that can be submitted to the scales. Are the cattle making profitable gains? Are the hogs fattening satisfactorily? Is the corn weighing out? What is the yield of the meadow? Is that draft well grown for his age?

Scales will yield money-making information almost every day on the stock farm. This explains the remarkable activity which prevails in the scale manufacturing plants of the country.

ECONOMY IN FARM OPERATIONS.

Breeders' Gazette.

I sometimes really wonder if there are any of us who do not take many more steps each day than we need, to do our regular daily work. Is it not too true that we often go about our work in a roundabout manner when we could save time and energy by using a little forethought? We allow our season's work to come upon us unprepared and then hurriedly plan some temporary arrangements which usually stand indefinitely, however inconvenient they may prove to be. Perhaps in the spring we discover the ground in condition to turn and suddenly remember the plowshares are dull and the harness needs oil and rivets. In the fall maybe rough weather sets in and the feed lot and racks are not in shape to use.

Now from my first statement I would not have you think that I am at all in sympathy with any short-cut method if it comes at the expense of efficiency. I never yet have seen any pressing the button system for doing the chores around the barn that impressed me as being altogether satisfactory. I remember when my older brother and I were small we were entrusted with the milking of several cows. Not being particularly fond of this kind of work, as it sometimes happens with boys, a notion crept into our heads that it would mean a great saving of labor if we could draw all the milk from but two teats of each cow and still get the same amount; four were more than a cow needed anyway—for any sensible boy need not be told that a cow's udder is one undivided vessel. Accordingly, unbeknown to my father, we tried the experiment on one of the cows for two weeks with dire results, when we were compelled to abandon the experiment and very nearly the cow. But you see we were trying to improve upon one of Nature's ways of doing things, which are invariably far ahead of anything that man can devise.

Suppose we are feeding a bunch of steers on shock corn from the field and want to feed twice a day. It is so easy to set aside a lot for the purpose, patch up a few boxes and begin operations. Then it follows that the team must stand in the barn with the harness on all day and be hitched up again at night to haul feed, or perhaps they are busy in the field when they must drop their work for the feeding. Only a few hours' work in the fall would put a partition through that lot, which no doubt is too large anyway, and thereby one round in the morning would place feed in the racks on one side for morning and the other side for night; then at feeding time in the evening all that is necessary is opening a gate and the work is done. This necessitates a few more racks, but this outlay is not to be compared with the saving of time from their use. I have used this plan for several years and find that one round will bring very nicely enough fed for twenty head of cattle.

I always aim to have a nice bunch of early fall pigs to follow the cattle when the older ones have gone to market, and it is a joy to me to watch them as they diligently look after the waste and to notice how fast they grow; but for various reasons we are not feeding cattle this winter and so we have had to handle our pigs differently. After the clover pasture gave out I added a slop of middlings to balance their corn and this is the way I have arranged it. I am not fortunate enough to have any fancy hoghouse on the place, but I judge one who could not make money today raising hogs without an expensive hoghouse ought to hire out to someone who can.

There is a nice barn, however, with a shed 30x40 feet in one end of the basement. I fenced off one-fourth of this for my slopping and feeding pen. I placed two troughs lengthwise of this pen and with my box of middlings in one corner, a tank of water in another, a salt bucket hung on a pin and the pig creep closed I can prepare the slop undisturbed and with a minimum amount of time and labor. I have always observed that when we have things handy we usually attend to our stock just a little better.

I dislike so much to see pigs root pretty golden ears of corn around in the mud or on a dirty floor, and at best it is difficult to prevent this wholly in rainy muddy weather. The thought struck me some time ago that if self-feeders work so well for lambs, why not for pigs? I made one, hitched the power to the sheller and ran through about 40 bushels of corn. This feeder is about 27 inches wide, 12 inches deep and 6 inches high and is set in one corner of my slopping pen, fastened to the wall. It works like a charm and I wonder why I never thought of it before. Someone says the pigs get too much corn. I think not; they will always squeal for their slop with water at their side. I never could figure any profit in limiting the feed to a maintenance ration for pigs anyway. No crowding and fighting, no feet in the trough. They begin when they wish and quit when they wish and I never had pigs do better. The power and sheller had been standing idle for some time, but now with a little time occasionally we can keep forty-eight shoats going and the beauty of it all is that the feed is always fresh and clean and always on tap.

THE HABITS OF THE BEE AND SOME MISAPPREHENSIONS.

From Pennsylvania Department of Agriculture Bulletin No. 148.

By Everett F. Phillips, Ph. D., (Fellow for Research in Zoology, University of Pennsylvania).

Of all animals, aside from man himself, there are very few that have been the object of more admiration and interest to men of every age than the common honey bee. The domestic animals have, of course, been the objects of much study, but it is much to be doubted whether they surpass the bee in interest. On account of its value to man as a honey producer, as well as because of its most interesting habits, but few insects are as well known as is the hive bee, Apis mellifera.

It may be profitable for us to review together for a short time some of the things that we know about bees, and it has occurred to me that possibly it might be even more profitable to find out what we do not know. There yet remains much to be done along the line of observations on the habits of the bee, and lest we forget that we do not yet know all that is to be known, let us first examine the difficulties in the way of observation and then hastily review our present knowledge in so far as our time will allow.

First of all, let us give credit to the men who in the past have spent their time in observation, for by their labor we of the present are enabled to read in a short time the results of years of work and profit in the practical work of apiculture by their recorded results. He would be an ignorant bee-keeper indeed who would fail to acknowledge his debt of gratitude to the men who have worked on the habits of the bee, for apiculture is founded on their work and would not exist today as a science were it not for such workers. The name of Aristotle, Swammerdam, Reaumur, Bonnet, Schirach, Huber and others well known to you must ever be venerated by beekeepers for the light these men threw on the activities in the hive. Huber, with his loss of sight, stands out among these as an example of a man who could do work of the greatest value in spite of an affliction which would make most men of little value to mankind at large. Later we come to the names of Dzierzon, the founder of the theory of Parthenogenesis, Von Berlepsch, Von Siebold and Weismann. We must also include Langstroth, Cowan and possibly Cheshire in the list, for they have done much in apiculture. There are many more men whose work has helped, but we cannot enumerate all of them. I regret to say that relatively few Americans have done much toward a scientific study of the bee, but what this nation lacks on that side has been more than made up in practical appliances and methods. The source to which every beekeeper should go for a knowledge of the habits of the bee is not a book written by any of the men that I have named, nor of any other man, but the one place to study the habits is beside a bee hive. First-hand information, properly obtained, is worth more than any amount of second-hand facts, and here, as everywhere, we can profitably follow the advice of the celebrated naturalist Agassiz, "Study Nature, not Books."

The study of the behavior of animals is not easy. I am well aware that many persons think that they could not want an easier task than to study the habits of the bee, but there are difficulties which make such work very trying and unsatisfactory.

In the first place, it is often hard to see just what a bee is doing. Let us take as an example what happens when we shake the bees from a frame in front of the hive entrance. In a short time a few bees nearest the entrance turn their heads toward the opening and begin to fan their wings; others soon do the same, and before long almost every bee is fanning as if its very life depended on it. Gradually they begin to move toward the entrance and enter the hive. Every beekeeper has seen this repeatedly, especially when hiving a swarm, but how many could tell what is going on among the bees? This action has been referred to as the "joyful hum" of the bees as expressive of their pleasure at finding again the hive in which they belong. Others have said that the noise of those nearest the hive is heard by the bees farther away, and they know where the colony is located. Whether bees can hear or not is a question which need not be discussed here, but these conclusions are inaccurate because the observations are incomplete. If you will carefully notice this particular action at the next opportunity you will see that the abdomen is raised to an angle of about forty-five degrees and that the last segment is bent down, exposing a light yellow strip between it and the next anterior segment. On this yellow area there appears a glistening drop of some fluid, and when the bee begins to fan a very peculiar odor is easily detected even by the human nose. Bees are, as is well known, governed largely by scent, and this particular action consists in the fanning back of the odor produced by this liquid. The difficulty in earlier observations was that the whole attitude and action was not observed, and consequently the conclusions were incorrect. It is not so much because this is hard to see, but because the observers were satisfied with a partial observation, that we long remained ignorant of this important habit. We pride ourselves on our ability to see things, yet any person who has investigated the subject knows how difficult it is to get two people to tell the same story concerning any observation; and this is not because their eyes do not see alike, but because they perceive only part of the event and let their imaginations fill up the gaps. In no place is this human fault more noticeable than in work on observation of habits, and as a result I feel free to say that this is one of the most difficult problems in the study of animals.

A second difficulty is that of giving reasons for the things observed. We are not satisfied with mere observations of actions unless we can see why they are performed, for otherwise the action is meaningless. Since the bee is constructed on a plan so totally different from ourselves, we often are unable to interpret the habits and doubtless many important things are still unknown for this reason.

A third difficulty, and one to which too much attention cannot be called, is the difficulty of distinguishing between verifiable and unverifiable truth. As an example, let us take the action of the worker bees toward the queen. The actual observation is this: The workers surround the queen on the comb and touch her with their antennæ. Whenever she approaches a worker as she moves over the comb the worker turns toward her and at once begins touching her with its antennæ. So much all observers see, but here they separate. One says the workers hold the queen in greatest respect and that they care for her and caress her because they know that on her depends the life of the colony; another observer denies all ability of a worker bee to feel any affection or similar emotion. Now who is right? No one can tell, for at the present time this is unverifiable. The actual movements are verifiable by any observer, but when we try to explain the inner feelings of an insect we enter the realm of unverifiable truth, where our imaginations are our only guides, and consequently our results are worse than worthless. This is the rock on which many observers of bees are shipwrecked. If only there were some way to eradicate the unverifiable statements from the books on bees what a marvelous advance it would be. The very best writers are at fault here and scarcely a bee journal appears that does not contain some such statements.

As another example of this, allow me to quote from one of the more recent works, the author of which may perhaps remain unmentioned.

"The antennæ, in some mysterious way, afford means of communication. By them the bee says all it feels to its friends and relatives.

"Watch two bees meet on a window frame; they instantly cross feelers, and if they come from the same hive there ensues such an outpouring of bee talk, such a tremor of crossed antennæ, such an evident condition of excitement all through their bodies, as might well fill the most practised gossip with envy.

"One can imagine the graphic terms in which they relate the recent awful experience of their capture, how they were suddenly and rudely jerked from a sweet blossom, and after indescribable shaking about in a strange thing made of bands too close together for them to get through and too tough for them to bite through, finally found themselves, as they supposed, free.

"The joy after the fear! but alas, their happiness was of short duration; for when they attempted to return to the clover field visible in the distance, they found themselves suddenly checked in mid-career by what seemed a wall of thickened air, a strange, hard, cold, transparant nightmare or a barrier which they could see through but could not pass.

"Poor little bees. No wonder their antennæ fly in the discussion of such strange facts, and how fortunate that the ears of the ogre, their captor, are not attuned to the remarks of their antennæ, as they express their opinion concerning him morally, mentally and physically."

Truly this author has wandered far afield in the realm of the unverifiable! I am not one of those who would eliminate all the poetic from our daily life, nor would I fetter the imagination as long as it leads to the truth, but to put such an array of obvious fabrication into a book which is intended to instruct us on bees is far from justifiable. It is just this sort of thing which has caused many persons to look with disfavor on much of the so-called "Nature Study" of our schools. It is really a pity that this author did not discover that there are more wonderful facts concerning the bee which were verifiable than any which were concocted to fill the book.

The three things which I have mentioned are difficulties which even men have who are well trained in observation. It takes much practice before the observations made by any person are of any value, and if we could but prevent people from publishing their results until they really know how to observe, what a blessing it would be to apiculture. There are other obstacles which we continually meet, such as the tendency to generalize from one or two observations, and the drawing of wrong conclusions because of bad logic. We may find examples of these later, but there is one other grave fault of which I wish to speak before leaving this subject. I refer to the use of the word "instinct."

I have no desire at this time to go into a discussion of the causes and nature of instincts. An instinct may be defined as a natural impulse, leading animals, even prior to all experience, to perform certain actions tending to the welfare of the individual or the perpetuation of the species, apparently without understanding the object at which it may be supposed to aim or without deliberating as to the best methods to employ. There are many actions of the bee which are carried out by newly hatched bees and for which we can see no cause. The difficulty here is that whenever an observer comes across an action which he cannot understand, and for which he can find no method of formation, he throws it into the general pile of "instincts" without further effort to find a cause. Is it not evident that what we so often call instincts are but actions which we do not understand? I believe, and I am not alone in my belief, that every instinct has a physical cause in the structure of the animal or its environment, and unless we do our utmost to arrive at the ultimate cause of these actions we have not finished our problem. There is a tendency for all men to think that when they have a name for a thing and can use the word fluently that they understand all the details of the question, but we must constantly avoid this. As an example of this, let us take the duties of the bees at different ages. Briefly, they work as follows: For the first day or two the young bees do not work, on account of their weak condition, but they soon take up the duties inside the hive, such as wax-building, nursing the developing larvæ, cleaning the hive, etc. Later, generally when about sixteen to nineteen days old, they begin to fly from the hive and ordinarily never do any of the inside work of the hive which they did before. Of course, it must be understood that varying conditions may change their actions, but this is what normally happens. Young bees do, of course, fly from the hive in what is called their exercise flight on warm afternoons, but they do not go so far from the hive but that they can be guided back by their sense of smell. Why do they go through this cycle? We can, of course, say that instinct impels them to do all these things, but how much more do we know about it when we have given a name to the impulse unless we look farther?

I have not investigated this problem very much, and do not wish it understood that I think that I have arrived at the ultimate and complete cause of this cycle of action, but certain facts seem to me to indicate that there is an organic cause back of all this. The large compound eyes, as well as the ocelli of the young bees, are covered with fine hairs, each one of which is much longer than a single unit of the eye. These hairs are not sensory, as Cheshire claims, since they are in no way connected with the nervous system. I can also see no reason why they should be considered as protective, since the chitinous lens of the eye is very dense and seemingly needs no protection of this kind. These hairs come off gradually and by the time the bee is ready to fly they are nearly all gone. I do not wish to make the mistake of failing to distinguish between accompanying and casual factors, but I am inclined to the belief that these hairs on the young bees so obscure their vision that they do not fly from the hive to forage because they cannot see clearly enough to do so. As we know, young bees do fly for exercise, but, as before mentioned, only so far that they might be guided back by scent.

Whether my view is correct or most erroneous, all must admit that it is no worse than the position of the man who says that it is all due to instinct, for he doesn't know anything about it and I profess to know but little.

That bees as well as other animals do certain things instinctively is too evident to be discussed, but what we now need, above all else, in the study of habits is to recognize the fact that the word "instinct" is too often a confession of ignorance and we must look for other and more fundamental causes where possible.

I have enumerated at some length the difficulties and liabilities of error in a study of the habits of the bee, and if I could but impress on every beekeeper the fact that these really exist I would be thankful. On the other hand, I know of no more favorable animal for study than the honey bee, and if I spend more time on the difficulties than on the advantages it is because the favorable side is better known.

The work of others in the past makes it possible for us to begin where they left off, and this advantage applies particularly to work on bees, where so much has already been done. The interest which we have in the bee from a commercial standpoint makes the work easier, for a person working on bees is doing something of interest to many people, and but few of us have reached that height of scientific perfection where we do not care for at least some popular interest in our work. Lastly, the numerous modern appliances of apiculture make it possible for us to study bees under many varied conditions, and these changed conditions bring out peculiarities in the habits which would not be seen, except with difficulty, under ordinary conditions. Movable frames, observation hives, mating nuclei, and swarm boxes are of inestimable value in the study of habits.

In discussing the habits of the bee it is hard to know where to begin. Perhaps there is no better way to arrange what is to be said than to follow a colony through a season, taking up the various phases of their activities in the order in which they occur in nature. We can thus avoid unnecessary repetition and still get in all the desired points.

In the spring of the year the colony consists of a queen, whose duties consist in laying the eggs in the cells of the comb, and many workers or undeveloped females. At this time there are no males or drones. During the winter the bees remain quiet, and the queen lays no eggs, so that in the spring there are no developing bees in the hive. The supply of honey is then also low, for they have eaten their stores all winter and none has been collected and placed in the cells. As soon as the days are warm enough the bees begin to fly from the hive in search of the earliest spring flowers. From these flowers they collect nectar, which is transformed into honey, and pollen, which they carry to the hive on the pollen baskets on the third pair of legs. The nectar is taken into the bee's mouth and then passes to an enlargement of the alimentary canal, known as the honey-stomach, where it is acted upon by certain juices secreted by the bee. On its arrival in the hive the bee places its head in one of the cells of the comb and deposits there the nectar which it has carried in. By this time the nectar has been partially transformed into honey, and the process is completed by the bees by fanning the cells to evaporate the excess of moisture which still remains. When a cell has been filled with the thick honey the workers cover it with a thin sheet of wax, unless it is to be eaten at once. The pollen is also deposited in cells, but is rarely mixed with honey. The little pellets which the bees carry in are packed tightly into cells, and if a cell of pollen be dug out of the comb one can usually see the layers made by the different pellets. This collecting of nectar and pollen continues throughout the summer and ceases only with the death of the last flowers in the autumn.

Almost as soon as the honey and pollen begin to come in, the queen of the colony begins to lay eggs in the cells in the center combs. The title of queen has been given to the female bee which normally lays all the eggs of the colony, under the supposition that she governs the colony and directs its activities. This we now know to be an error, but the name still remains Her one duty in life is that of egg-laying. She is most carefully watched over by the workers, and is constantly surrounded by a circle of attendants who feed her and touch her with their antennæ; but she in no way dictates what shall take place in the hive. The eggs are laid in the bottom of the hexagonal cells, being attached by one end to the center of the base. The first eggs laid develop into workers, and are deposited in cells one-fifth of an inch across. As the colony increases in size by the hatching of these workers, and as the stores of honey and pollen increase, the queen begins to lay in larger cells measuring one-fourth of an inch across, and from the eggs laid in these cells drones develop. The size of the cell does not determine the sex, as will be explained later; but the queen almost invariably lays the worker eggs in the smaller cells and the drone eggs in the larger ones. As these male eggs develop and hatch, drones begin in the colony, generally about the first of May in temperate climates.

The eggs do not develop directly into adult bees, as might be inferred from what has just been said; but after three days there hatches from the egg a small white worm-like larva. For several days the larvæ are fed by the workers, and the amount of food consumed is truly remarkable. The larva grows rapidly, until it fills the entire cell in which it lives, and then the workers cover the cell with a cap of wax while the larva inside spins a delicate cocoon under the cap. The worker brood can at once be distinguished from the drone brood by the fact that the workers place a flat cap over worker brood and a high arched cap over drone brood; and this often is of great help to the beekeeper in enabling him to determine at once what kind of brood any hive contains. Twenty-one days from the time the egg is laid the young worker bee emerges from its cell, having gone through some wonderful transformations during the time it was sealed up, this stage being known as the pupa stage. For drones the time is twenty-four days.

About the time the drones begin to appear, the inmates of the hive begin to prepare for swarming, which to anyone watching the habits of bees is one of the most interesting things that takes place in the colony.

The workers now begin to make queen cells. In our previous description of the development of the young from the egg nothing was said about the queen, and there are some decided differences in her growth which we will now take up.

As was stated earlier, the queen and the workers are all females. Schirach, an old authority on bees, discovered that the bees can take a young worker larva soon after it hatches from the egg, and, by giving it special food, royal jelly, all during its larval life, and, by constructing for it a special cell, make of the otherwise worker larva a fully developed queen. This it is that the workers of a colony do when they are preparing to swarm. Several young worker larvæ are chosen as the material for queen-rearing, generally located near the margin of the comb. The workers now begin to feed these chosen larvæ an extra amount of food, and at the same time the sides of the cells containing them are remodeled and enlarged by the destruction of surrounding cells. The queen (or royal) cell is nearly horizontal at the top, like the other cells of the comb, and projects beyond them; later the workers construct another portion of the cell into which the queen larva moves. This is an acorn-shaped cell placed vertically on the comb, about as large as three ordinary cells. As the cell is being built the queen larva continues to grow until the time comes for her to be sealed up and enter the pupa state. Although it takes the worker twenty-one days to complete its development, the queen passes through all the stages and reaches a considerably larger size in but sixteen days.

Before leaving the subject of the raising of queens, it might be well to state that if, for some reason, a queen is killed in the hive, or by chance gets lost, the workers can at any time replace her by the same method, provided, of course, they have worker larvæ on which to work. In the same way they will replace or supersede an old queen when she begins to show signs of decreased power of egg-laying, so that this peculiar performance is not characteristic of swarming only.

In the swarming season, at about the time the new queens are ready to leave their cells, the old queen leaves the hive and takes with her a part of the workers, this being known as "swarming." This generally takes place in the morning of a warm, pleasant day. It may as well be confessed that we know very little about this remarkable instinct of the bee. In the first place, under ordinary conditions, the old queen would not allow queen cells to be constructed in her colony, nor has anyone told us why she allows it now. Neither do we know what starts the actual swarming, nor which bees, workers or queen, first set the hive in motion. We are equally ignorant of what is the thing which compels certain bees to leave with the old queen and why the others stay in the old hive with the young queen. Since the prevention or control of swarming is such an important problem in practical apiculture, the value of research along this line is evident. Since our original hive has now divided, let us follow the swarm with the old queen and later return to the old hive to observe the actions of that.

In the hands of a beekeeper the departing swarm may be put into another hive, provided he wishes to increase the number of his colonies; but in nature the swarm will find an old hollow tree or some similar place in which to establish itself. The bees, before leaving their old hive, fill themselves with honey until the abdomen is greatly distended, and for this reason it is not necessary for them to collect nectar for a day or two, for they have other work to do. Some of the bees begin to clean up the new quarters and get it fit for occupancy; but most of them begin the construction of new combs. To do this they suspend themselves in curtains from the top of the hive and remain motionless for some time. The wax used in building comb is secreted by the workesr in eight small pockets on the lower side of the abdomen while they thus hang in curtains. Finally, after considerable wax has been thus formed, they begin to build. The small flakes of wax are passed forward to the mouth, there mixed with a salivary secretion to make them pliable, and then are placed against the top of the hive. Other workers then come and place their small contributions of wax on those first deposited, and this continues until the combs are finished. There is more to comb-building than the mere sticking on of wax plates, however; and nothing in all bee habits is more wonderful than the beautiful plan on which they build the comb. The cells are hexagonal in shape, so that each cell in the center of the comb is surrounded by six others; nor is this the only remarkable thing in their architecture, for each comb is composed of a double row of cells, the base of each cell being formed of three parts, each one of which is likewise a part of a separate cell on the other side of the comb. By this method the bees obtain the greatest possible capacity for their cells with the least expenditure of wax. The accuracy of the cells of the comb has in all ages been an object of admiration of naturalists and beekeepers; and while the degree of perfection assigned to these cells has undoubtedly been over-stated by most writers, yet we cannot but admire and wonder at the remarkable instinct, almost bordering on intelligence, which enables the bees to build cells so well suited to their purpose.

As soon as there are some cells constructed, and even before they are entirely completed, the queen begins to lay eggs, and the workers begin to collect stores of honey and pollen. They also collect in considerable quantity a wax-like substance from various trees, commonly called propolis, with which the inside of the hive is made tight, closing up all openings except the one which serves as an entrance. In this way the new swarm prepares for itself an abode like the one it left; and by sealing up the crevices and gathering stores it prepares for the coming winter.

We may now return to the colony which remained after the swarming took place to see what happens there. The colony left in the old hive retains all the brood and honey stores, and has a newly hatched queen. There is then no necessity for wax building nor for sealing up the hive; but this colony is already in a normal condition except that the queen is not yet ready to perform her duties, and she will receive our attention now. A very young queen receives little attention from the workers, but goes about the combs practically unattended. When about five days old (the exact time depending on the weather), in the afternoon, the virgin queen flies from the hive to mate with a drone. She first takes several short, preparatory flights to get her hive located so that she may find it on her return, and finally she flies upward in constantly enlarging circles, high in the air. Thus far she may be easily followed; but few have been fortunate enough to observe the actual mating. Sometimes the mating takes place at a lower point, and a few men have recorded the fact of witnessing the completion of the mating flight. The queen, on leaving the hive, in some way attracts a great many drones to her from all parts of the apiary, provided her hive is located in a bee-yard, and the swiftest and strongest is successful in the race. The other drones often follow the queen back to her hive, and for an hour or two remain on the outside of the hive after she has entered, but later they return to their former hives.

The queen returns from the mating flight in about half an hour, carrying with her the generative organs of the male, which is killed during the union of the two. Near the posterior end of the queen is a small sac, which, before the flight, is filled with a clear liquid, but after her return this sac is filled with an opaque fluid; and it is the reception of this opaque substance which is the essential thing in mating. This liquid contains millions of spermatozoa, or male sex cells, each one of which is capable of fertilizing an egg as it glides past the opening of the sac. This supply of spermatozoa is almost always sufficient to supply the eggs laid by a queen for three or four years—it rarely happening that she mates a second time before laying. Since a queen can, during her lifetime, lay a total of 500,000 eggs, most of which receive one of these spermatozoa, it will be seen that the apparatus for preserving them is very perfect, since the queen cannot generate more and they do not divide or increase in number in any way.

The mating of queen and drone never occurs in the hive, but always in the air, on the wing. This fact prevents what is known as in-and-in breeding; for if the queen mated in her hive she would receive spermatozoa from her brothers, and we know that such close breeding is undesirable in all forms of life. The cause of the undesirable results of in-breeding are yet a mystery; but we do know that they follow, and this habit of the queen of mating outside the hive renders close crossing less probable. After the queen has returned to her hive the workers remove the male organs. These parts of the male are not absorbed by the queen, as is sometimes claimed; but the spermatozoa contained in them are taken into the spermatheca and the rest dries up and is removed. Almost as soon as the queen returns from her flight there is a difference in the treatment which she receives from the workers. It happens at times that she is not received kindly after taking her flight, and may be killed by the workers, which do not recognize her as their queen, probably on account of some new odor which she has acquired during her absence. This is rare, however, for ordinarily she is the object of much attention on her return. From this time on, whenever she stops for a moment on the comb, either to deposit an egg or to rest, she is surrounded by the workers. In about two days after mating the young queen begins to lay, and this one duty she performs until her death, never again leaving the hive except with a swarm.

The colony with the young queen is now in the same condition as the one which left the hive, both having laying queens, combs, brood and a sealed hive. Their histories, under normal circumstances, are then practically the same. Both prepare for winter, and the following spring both cast swarms again, and so the cycle is repeated. Such is the activity of bees under favorable conditions; but, needless to say, this ideal is not always realized, and we will now follow colonies under other conditions.

Let us take a colony with a virgin queen like the one left after a swarm is cast. It sometimes happens that the queen is defective in some way so that she cannot fly from her hive to meet a drone. This may be caused by mutilated or weak wings, or possibly the queen shows no disposition to fly. On the other hand, the weather may not be favorable for her flight, or there may be no drones in the air when she does fly. Evidently any of these conditions will prevent mating; and when this occurs we are enabled to see one of the most remarkable phenomena of the hive. The observer who wishes to study this phase of bee activity may bring about the same conditions by cutting off the wings of the queen or by covering the entrance of the hive with perforated zinc so that it is not necessary to depend on chance to bring about what we are now to observe.

If a queen remains unmated for a period of three weeks she is incapable of mating and loses all desire to leave the hive to meet a drone. After that time she may begin to lay eggs, but, strangely enough, these eggs produce nothing but drones and the queen is then what is known as a "drone layer." Obviously then, drones are produced from eggs which have not been fertilized. Not all unmated queens become drone layers; in fact, many queens die if not mated, and many others never lay at all; but if any eggs are laid they produce only drones. From my own experience in trying to bring about this condition I can say that the person wishing to verify the statements made concerning this strange phenomenon should start several virgin queens in hives and possibly one or two will lay.

This introduces us to one of the most remarkable phenomena which is known to occur in nature, but it is not characteristic of bees alone. In the vast majority of cases in the animal kingdom eggs disintegrate unless fertilized by spermatozoa of the same species. Just why fertilization is necessary is still a disputed point among scientists; but we know that it is necessary in most cases. To the development of egg without the usual fertilization the name "Parthenogenesis" is applied.

The parthenogentic development of drones was first completely described by Johannes Dzierzon, a priest of Karlsmarkt, Germany, and a beekeeper of long experience. It has since been verified by many workers on the subject. As the eggs pass down the oviduct on their way from the ovaries of the queen they pass the opening of the spermatheca, and if the egg is to become a female it receives from this spermatheca one, and only one, spermatozoon; if it is to become a drone it receives no spermatozoon, and consequently remains unfertilized, as do all the eggs of a drone layer. A normally mated queen rarely lays a drone egg in a worker cell, or vice versa, provided both kinds of cells are present, and consequently we are forced to the conclusion, as much as we dislike to admit it, that the queen in some way can control the laying of eggs of different sex, but how this is done is a mystery. I say we dislike to admit this because it is entirely beyond our comprehension and as stated in the earlier part of this talk, one of the difficulties in recording observation is the giving of reasons for things observed.

Another fact which supports the theory of parthenogenesis is that workers in a colony which is hopelessly queenless will often begin to lay eggs. As we have said, workers as well as queens are females, but they are incapable of mating, and the eggs laid by them produce nothing but drones.

This statement of the theory of parthenogenesis or the "Theory of Dzierzon," as it is commonly called, differs from the usual statements of the theory that find place in the books on apiculture. The Theory of Dzierzon can be divided into two parts. (1) Drone eggs are unfertilized, while female eggs are fertilized. To this part all observations lead us to subscribe. (2) All the eggs in the ovary of the queen are male eggs and the fertilization of the egg changes its sex and it becomes female.

The latter portion of the theory is not founded on actual observation but on logic only, and not on sound logic either. Let us state the theory in a different manner. Male eggs are unfertilized and female eggs are fertilized. As far as we can see this is the only difference between them, and since we can see no other difference this must be the thing which changes the sex. Is it not clear that the conclusion does not necessarily follow, for is it not possible that there is some difference between these eggs not yet observed, which is the all-determining factor, rather than that fertilization is?

Fertilization may have nothing to do with sex-determination: (1) Nowhere else is the animal kingdom, except in animals exhibiting parthenogenesis, is it claimed that fertilization has any influence on sex. (2) The ants, which were formerly considered to be similar to the bee in their parthenogenesis, sometimes, according to some recent work, have females produced from unfertilized eggs. (3) In the vast majority of cases where the problem of sex has been investigated there is strong evidence that the sex of the offspring is determined before the egg leaves the ovary. (4) Certain observations made during the past two summers tend to show that there is some other difference between male and female eggs.

In studying the problem of parthenogenesis I was struck by the illogical conclusion concerning sex, and to test the theory spent some considerable time in observations on the subject. I found that many of the eggs laid by a drone-laying queen never develop at all. According to the theory as propounded by Dzierzon and his followers, all the eggs in the ovary are male and if they are unfertilized all should develop and become drones. But all do not develop. I have observed drone-laying queens in one-frame observation hives, and in eight-frame hives, and in all my observations there were always a considerable number of eggs which dried up and did not develop. Of course, all that did develop became drones.

From these facts it is possible that the sex may be determined in the ovaries before fertilization. Male eggs do not require fertilization, and therefore can develop when laid by a drone-layer, but the female eggs of a drone-layer require fertilization, and since they do not get it they die. I am as yet unable to give an exact ratio between the number of eggs which develop and those that do not, owing to difficulties in observation, but of the fact that some do not develop I am sure.

Of course, it will be recognized that this is but a theory with a somewhat small basis of fact, but the facts observed seem to me to be enough to throw doubt on the second part of the Dzierzon theory—that sex depends on fertilization. For fear of being misunderstood, let me repeat that my observations confirm the view that drone eggs are unfertilized, so that the first part of the Dzierzon theory remains unchallenged, as far as I am concerned. The entire subject of the parthenogenetic development of the drones is still but little understood. A few facts are well known, but around these facts there has been woven a mass of good and bad guesses which must be cleared up. If the theory could be stripped of these surmises, the whole subject would be much clearer; and one who undertakes to work on this line must drop all but well-verified facts.

There is one other line of work on bees in which I have been interested for some time and on which there is yet considerable work to be done. According to the views of the majority of zoologists, the variation of animals is the result of crossing of two lines of heridity. In other words, worker bees would tend to vary all the way between their two parents, while drones would tend to be like their single parent. This is certainly logical, but by this time we know that it is not possible to figure out in advance what animals are going to do. To test this I have measured something over a thousand each of drones and workers. In this work I chose certain characters on the wings, for reasons which need not be discussed here. Briefly my results are as follows: Drones vary considerably more than workers, rather than less, as we would logically conclude; and furthermore, this variation depends more on the environment under which they are raised than on any inherited tendency. Some as yet unpublished measurements confirm this view most strongly.

I have mentioned but relatively few of the habits of the bee, and if I seem to have taken the view that our present knowledge is meager I hope you will overlook it if you think me pessimistic. The study of the habits of the bee are of the utmost importance to apiculture and since so much remains undetermined, let us hope that many will be enough interested to take up the work. My acquaintance among bee-keepers is not as wide as I would wish, but let me say that the best and most successful that I know are the ones who most carefully study their bees. On this account I urge the necessity for still more work on the habits.

I have carefully avoided a discussion of modern appliances in bee-keeping, and especially cut very short any mention of queen rearing, since this subject will be ably discussed tomorrow by a man who knows that subject better than I do. It is not because I undervalue the practical side of bee-keeping that I have confined my remarks to more theoretical matters, but because I fear that most apiarists rather undervalue the so-called theoretical work concerning the bee. I hold that one depends on the other and neither one alone will ever be a full success. This is my justification in giving expression to the views and facts here spoken.

FOUL BROOD AND OTHER DISEASES OF BEES.

By Hon. N. E. France, Wisconsin State Inspector of Apiaries, Platteville, Wisconsin.

Foul Brood—Bacillus alvei is a fatal and contagious disease among bees, dreaded most of all by beekeepers. The germs of disease are either given to the young larval bee in its food when it hatches from the egg of the queen bee, or it may be by contagion from a diseased colony, or if the queen deposits eggs, or the worker bees store honey or pollen in such combs. If in any one of the above cases the disease will soon appear, and as the germs increase with great rapidity, going from one little cell to another, colony to colony of bees, and then to all the neighboring apiaries, thus soon leaving whole apiaries with only diseased combs to inoculate others. The island of Syria in three years lost all of its great apiaries from foul brood. Dzierzou in 1868 lost his entire apiary of 500 colonies. Cowan, the editor of the British Bee Journal, recently wrote: "The only visible hindrance to the rapid expansion of the bee industry is the prevalence of foul brood, which is so rapidly spreading over the country as to make beekeeping a hazardous occupation." Canada's foul brood inspector, in 1890 to 1892, reported 2,395 cases, and in a later report for 1893 to 1898, that 40 per cent of the colonies inspected were diseased.

In Wisconsin I know of several quite large piles of empty hives, where all the bees have died from foul brood; also many other apiaries where said disease had gotten strong foothold. By the kindness of the Wisconsin beekeepers, in most cases, I have, during the last eight years, gotten several counties free from disease, and at the present writing, May 27, 1905, have the disease under control. Foul brood is often imported into Wisconsin, so we must expect new cases until all states have such laws as will prevent it. Arizona, New York, California, Nebraska, Kansas, Colorado, Utah, Ohio and Texas have county inspectors. Wisconsin, Illinois and Michigan have State inspectors. Copy of Wisconsin laws are now pending in legislatures of Pennsylvania, New Jersey, Maine, Minnesota, South Dakota, Idaho and Washington.

CAUSES OF FOUL BROOD.

Causes of Foul Brood—1. Not from chilled, pickled, starved or any form of dead brood. But such conditions are most favorable for growth of disease. Foul brood germs do not float in the air. If they did why would not every brood cell in an infected hive become diseased?

2. Bees sold, having disease, and new locations thus inoculated.

3. Combs, or implements from one apiary used by others in their apiaries.

4. Robber bees, getting honey from infected combs—greatest danger.

5 Buying queen bees from infected apiaries. To be perfectly safe in this deal, on arrival of queen place her alone in a clean queen cage with plenty of good honey. Introduce her in this last cage and burn the just received cage and attendant bees and no evil results, even from such queens out of infected hives.

EXPERIMENTS.

Experiments—1. A Wisconsin beekeeper had foul brood among his bees so bad that he lost 200 colonies with it before cured. Having an extractor, wax press, etc., at home, he placed the bees in boxes while he boiled the hives, extracted the honey from all the combs and boiled the honey, also all combs making beeswax into comb foundation. He then placed the bees in their same hives on foundation made from infected combs, and fed the infected BOILED honey. Ten years has passed and no signs of disease there since.

(2) Dried Scales—If the disease has reached advanced stages all of any danger of disease. To prove this I took a quantity of badly infected combs, rendered the wax myself, and had two of the extensive manufacturers of comb foundation make into foundation this lot of wax. Then selected twenty of the best apiaries in Wisconsin, where no disease ever was known, and in sixty-two colonies placed this foundation. Five years have passed and no signs of disease in any of those hives.

(3) Honey or wax from a sun heat extractor is not safe to use until same is boiled.

SYMPTOMS OF FOUL BROOD.

(1) Brood in combs badly scattered, many empty cells, cappings dark and sunken, some with holes in cappings, part of the brood hatching while others are dead. The dead larvæ of a dark brown color, or blackish, according to age. The lightest colored will upon inserting a toothpick draw out much like rubber or glue and at that stage has most odor, much like stale glue when warm.

(2) Dried Scales—If the disease has reached advanced stages all of above conditions will be easily seen. According to its age of development there will be either the shapeless mass of dark brown matter on the lower side wall of the cell or the dried scale. This scale nearly black and dried hard to wall of comb as thin as side wall of the cell. The head of the bee often dies in a small bunch and turned up some. In size, about half size of pin head.

HOW TO DETECT FOUL BROOD.

Take out carefully the oldest hatching brood in the hive and first see if the cappings are smooth or sunken and scattered, with some having small holes in the cappings. This is more noticeable in old black combs. Now bring the brood comb right side up to the level of your chin, tip the top of the comb towards you so your view strikes the lower walls of brood cells about one-third distance from front. Next turn your body so that bright daylight comes over your shoulder and shines in each cell where your view of suspected disease is found. Gas or electric light will not take the place of sunshine or strong daylight.

On the lower side wall, just back from front end of the cells, will be seen the apparently dead foul brood, nearly black, with a sharp pointed head slightly turned up. The body portion of the bee flattened to a mere black lining of its cell, no thicker than one side wall of the comb cells. The other side walls and bottom of the cell look clean. The scales, if present as described, are a sure proof of foul brood. Such infected combs must be burned or melted in boiling water, thus killing all disease and saving the wax. Diseased combs melted by sunshine heat will not kill all disease. I always use abundance of boiling water in saving wax from old combs. I first melt the combs in large kettle of boiling water, and when all melted and well stirred, is then strained through the wax press, thus saving everything of any value.

TREATMENT.

McEvoy Treatment—In the honey season when the bees are gathering honey freely remove the combs in the evening and shake the bees into their own hives; give them frames with comb foundation starters and let them build combs for four days. The bees will make the starters into comb during the four days and store the diseased honey in them which they took with them from the old comb. Then in the evening of the fourth day take out the new combs and give them comb foundation (full sheets) to work out, and then the cure will be complete. By this method of treatment all the diseased honey is removed from the bees before the full sheets of foundation are worked out. All the old foul brood combs must be burned or carefully made into wax after they are removed from the hives, and all the new combs made out of the starters during the four days must be burned or made into wax on account of the diseased honey that would be stored in them. All the curing or treating of diseased colonies should be done in the evening, so as not to have any robbing done, or cause any of the bees from the diseased colonies to mix and go with the bees of healthy colonies. By doing all the work in the evening it gives the bees a chance to settle down nicely before morning and then there is no confusion or trouble.

TO PREVENT SWARMING OUT WHEN TREATED.

This same method of curing colonies of foul brood can be carried on at any time from May to October, when the bees are not getting any honey, by feeding plenty of sugar syrup in the evenings to take the place of the honey flow. It will start the bees robbing and spread the disease, to work with foul brood colonies in warm days when the bees are not gathering honey, and for that reason all work must be done in the evening when no bees are flying.

When the diseased colonies are weak in bees put the bees two, three or four colonies together, so as to get a good sized swarm to start the cure with, as it does not pay to spend time fussing with little weak colonies. When the bees are not gathering honey any apiary can be cured of foul brood by removing the diseased combs in the evening and giving the bees frames with comb foundation starters on. Then also in the evening feed the bees plenty of sugar syrup and they will draw out the foundation and store the diseased honey which they took with them from the old combs; on the fourth evening remove the new combs made out of the starters and give the bees full sheets of comb foundation and feed plenty of sugar syrup each evening until every colony is in first class order. Make the syrup out of granulated sugar, putting one pound of water to every pound of sugar, and bring it to a boil. As previously stated, old combs must be burned or made into wax and so must all new combs made during the four days. No colony is cured of foul brood by the use of any drug.

All the difference from the McEvoy treatment that I practice—I dig a deep pit on level ground near the diseased apiary and after getting a fire in the pit such diseased combs, frames, etc., as are to be burned are burned in this pit in the evening and then the fresh earth from the pit returned to cover all from sight. Often I use some kerosene oil, a little at a time being poured on old brood combs or those having much honey in, as they are hard to burn. If diseased combs with honey in are burned on the surface of the soil there is great danger; the honey when heated a little will run like water on the soil and in the morning the robber bees will be busy taking home the diseased honey that was not heated enough to kill germs of foul brood.

I also cage the queen while the bees are on the five or six strips of foundation. It helps to keep the colony from deserting the hive and going to other colonies.

I do not believe in or practice burning any property, such as hives, bees, beeswax or honey that can be safely treated and saved. Many times it is poor economy to save all and as so many beekeepers are not so situated as to keep all diseased material from robber bees while taking care of it, I take charge of the treatment, using my wax press to save all the beeswax that would have been wasted.

NEEDS OF THE RURAL SCHOOLS.

Miss Mary Riley, Spencer, Iowa, Before Clay County Farmers Institute:

The student of our educational history cannot fail to be impressed with the wonderful progress made in the past century in the development of our public school system, and yet, with its marvelous growth and its limitless possibilities for the future have some element of weakness that in many cases are impairing its usefulness. Its founders did not intend that it become a place of leisure, but a place where brain, if not brawn, should receive some degree of development. It is conceded, I think, that the object of the public school is to train for citizenship. This is true of the rural schools as well as the graded schools. But the rural school advancement has not kept pace with the wonderful progress of the secondary schools and colleges.

For one thing, the rural school has made little preparation regarding the health of the child. There are very few rural school buildings in the State of Iowa today in the construction of which any special attention has been paid to the proper heating, lighting and ventilation. The only respect in which most of the rural school buildings differ is in length, breadth and height. So much do they resemble one another in style of architecture that the horse of any county superintendent will soon recognize a country school house at sight and turn in without any guidance. Inside is found many times an old stove standing in the center of the room that roasts the children sitting near by, while those farther away are nearly freezing; windows on opposite sides lighting the room by cross lights, which are occasionally raised or lowered to supply a little fresh air. These are the common provisions made for the heating, lighting and ventilating of the school room.

At a very little extra expense a jacketed stove, a double flue, one for smoke and one for an outlet for foul air, and high windows on one side and rear of building could be provided, which would add much to the health and comfort of teachers and pupils. I think the time has come when a law should be placed on the statute books fixing the maximum requirements in the construction of a rural school building, and making it mandatory that some provision be made for the proper heating, lighting and ventilating of the building.

"Cleanliness is next to Godliness" is an old maxim and measured by this standard I am sorry to say that many, if not most, of our country schools have wandered far away from Godliness. Some of the schools, I am sure, have not had a thorough scrubbing and cleaning for years.

What we need today is not so much additions to the course of study as we do more attention to the simple things connected with the everyday life and experience of the pupils in the schools. It has been truthfully said: the public school is the place to which we should turn our chief attention in the effort to promote a more beautiful public life in America. The school house and the school grounds should be as beautiful as any home in the country, and the child should be surrounded with neatness and beauty from first to last. Trained in the habit of seeing the good and beautiful and knowing it, he will come instinctively to hate ugliness and deformity wherever he sees it, whether it be physical or moral. Dozens of our school houses present unsightly appearances. Many of the future citizens of this republic are getting their education under most unfavorable conditions. I do not know of anything that needs the attention of the country people more today than the healthfulness, cleanliness and beautifying of the school house and its surroundings. It is within the power of pupils, parents, teachers and all friends of education to change these conditions until we shall have everywhere attractive buildings, standing on attractive grounds, leading attractive pupils and attractive teachers to higher ideals of beauty and order.

Have the advantages for the education of the farm boy and girl kept pace with the advancement in all other lines of society? Is the little schoolhouse with its poor equipment—in some places I have found only one map to aid in the teaching of geography and that a map of Iowa furnished by the railroad commissioners, no dictionary, no chart, a few painted boards across one end of the room the only blackboard, with the poorly brained teachers in many instances, with very poor work in the common branches—are these sufficient to meet the demands of today for the common school education?

Have you not reached the period where nothing short of a well-equipped schoolhouse, a first-class teacher and a course of study to meet the demands of the times are a necessity for your children?

One of the great needs in the country schools today is a public opinion which will demand a high grade of service and willingly pay for it, one which will equip the school for its work as well as the modern farm is equipped for its work. Another need is a supply of efficient teachers, teachers of culture, training and character, teachers whose whole hearts are in the work.

A few years ago a State superintendent in our State asserted that we had 5,000 teachers in Iowa who had no farther training than that gained from the country schools. No doubt some of these people are by nature good teachers and do good work, but what shall be said of the schools of a majority of these teachers? A competent teacher at $60 per month will accomplish three times as much as an incompetent one at $30 per month. Waste in time is not the most serious thing with children in a poorly conducted school. Low ideals of duty and of the value of effort are far greater evils than loss of time alone. A noted educator has said, "You call no uneducated quack or charlatan to perform surgery upon the bodies of your children lest they may be deformed, crippled or maimed physically all their lives. Let us take equal care that we entrust the development of the mental faculties to skilled instructors of magnanimous character, that the mentabilities of your children may not be mutilated, deformed and crippled to halt and limp through all the centuries of their never-ending lives. The deformed body will die and be forever put out of sight under the ground, but a mind made monstrous by bad teaching dies not, but stalks forever among the ages. an immortal mockery of the divine image."

But you say we must take the teachers we can get. How can we better conditions? Teachers are very scarce now. The secret and the solution of the whole thing is in the wages paid the teachers. When uneducated, unskilled laborers are paid from $30 to $40 per month and board besides for farm or any other kind of labor it is very unreasonable to expect to get educated labor for the same wage and pay for board. It has been suggested that our financial prosperity causes our pedagogical poverty. Many who used to desire positions as a means of livelihood are no longer under the necessity of working for the salary offered. Public opinion yet tolerates the filling by very young women of the ordinary positions while they are awaiting new honors, but ridicules the young man who teaches in a country school unless he does it as a makeshift while he is preparing himself for a life work. The reason for all this is not that the work itself is debasing, but that the financial results are inadequate and belittling. Not until the remuneration is put upon a basis that will compare with other professions, not until the skilled teacher is paid fully as much as the unskilled laborer, not until as desirable a livelihood, not for a year, but for life, as is found elsewhere is assured, can we expect fully prepared, professional teachers. This wage must be increased to a point that will restore honor to the work, to a point where men as well as women will respond to the call, to a point where a family and not the individual alone may derive support.

The brevity of the term in our rural schools also affects the problem. Few of us can afford to be idle four or five months of the year. This would not matter for hibernating animals, but for men and women clothing and food must be had for the whole twelve months.

Success along any line cannot be secured unless one gives his whole time to his work. Who knows a man who is a success as a farmer six month of the year and success as a merchant, a druggist, a banker or a politician the other six months? No. No man is so constituted that he can be jumping from one vocation to another every six months and still be a leader in any profession. Men may be interested in many kinds of business and succeed in all, but no man can be six months this, two months that and four months something else, and still retain a mastery or leadership in anything.

No more can a teacher be seven or eight months in a school room and the other four or five in the hammock, or the kitchen, or a clerk. A teacher must be a teacher all the time, just as a doctor must be a doctor or a lawyer be a lawyer all the time. Each may and should have a short vacation, but should not engage in a new line of work. Our rural schools should run not less than nine months each year. Why should the pupils in the cities and towns be given better school privileges than the pupils in the country? But there is yet another reason for the scarcity of teachers, and a reason for which the parent is directly responsible, and that is the lack of co-operation between the home and the school. If I were asked to name the one greatest need of the rural schools I would unhesitatingly say it is the need of a more sympathetic understanding between the parent and the teacher.

That the teacher will make mistakes is a foregone conclusion. That she will sometimes misunderstand the pupils under her charge is equally certain. Children are sometimes misunderstood in their own homes. How many of you who so severely censure the teacher for an occasional mistake have made any attempt to assist her in understanding the mental makeup of your child? How many of you who do so recognize the fact that the environment of the school room is different from that of the home, and that, therefore, the teacher may not always be able to employ your methods in dealing with your child? How many of you realize that offenses which would be trivial in the home become serious matters in the school room because of the crowded conditions, the pressure of time, the stress of work and the different natures of the children therein? How many of you realize that an accumulation of small offenses becomes as serious as a great offense? How many of you are training your child in insincerity and falsehood by allowing him to work you with their talk of abuse at school which they know well you will make little effort to verify. Just the other day a parent came to the office highly excited over the shortcomings of one of the teachers. After listening to his story I said, "You know all these charges are true, of course; you have been to the school and investigated the conditions?" I was not surprised at the reply, "Oh, no, but my child told me so." Subsequent investigation on my part showed there was very little ground for the charges made.

How many of you allow your children to speak in disrespectful terms of the teacher at home? How many of you extend the same courtesy and consideration to the teacher that you do to your other friends? How many of you praise the teacher's virtues as loudly as you condemn her faults? Not long ago a teacher in a very troublesome school said to me, "I just hate teaching in the country. The parents critisise the teachers so that the children hate her before they even start into school. Think, parents, what an injustice you are doing, not only to the teacher, but to your own child. The bugbear in the eyes of the rural teacher is, I am sorry to say, the average parent. So many parents interfere with the management of the country school without properly understanding conditions, insisting upon his child passing on, covering ground regardless of what he is getting out of it. In many cases the young teacher does not dare put the child in the class where he properly belongs for fear of incurring the displeasure of the parents.

It used to be regarded as a privilege to attend the public school of the past, but in modern times the pupils seem to feel in many cases that his presence honors the teacher and often threatens to deprive her of that honor if she attempts to include him in any regulation that is not exactly to his liking. This is a wrong sentiment, parents, and you are responsible for it. How often we hear the question asked of a child, "Well, John, what did your teacher do to you today?" implying that some injustice had been done him. Or, "Well, John, how do you like your teacher?" Would it not sometimes be wiser to ask, "Well, John, how does your teacher like you?" Do not make him feel that he is always the one to be pleased. Have him know that he, too, must stand in judgment.

All teachers are not perfect by any means. They need your assistance, advice or suggestions and need to know what the trouble is with their work. If your child is having trouble in school call on the teacher out of school hours, have a friendly talk with her in regard to the trouble, remember there is no one beside yourself more interested in your child's welfare than the teacher. Work with the teacher instead of against her and you will soon see the improvement in your child, both mentally and morally.

Again, parents often tell children they do not need to study certain branches required by the teacher. This, too, is wrong. When a pupil enters school he is expected to follow the course of study. He is not thought to have the knowledge necessary to decide what studies are for his future good.

How can a child tell what is best for him? Why should he be a law unto himself? The experiences of the past century should certainly have thrown some light on the relative value of studies usually taught in the public schools. Why should any boy be permitted to study hard on what is easy and give up that which is difficult.

If we go to a physician we do not tell him how he must treat our ill. If we go to a lawyer we do not dictate how he shall try our case. These men are professional men who are supposed to know best what can and should be done in the line of their life work. It is the same way with teachers. Your children go to them for instruction and the teachers, not the children, should lay down the rules of conduct so far as school work or school results are concerned. Otherwise you have no right to hold the teachers accountable for results.

Education should be a training for life, a preparation for future work. The leading educators all see the great necessity for co-operation between the home and the school in order that the best results may be obtained.

Then, for the sake of your child, make a friend of his teacher, visit the school, take an interest in the child's school life and do not criticise the teacher in his presence, even though you feel that circumstances justify you in so doing.

I cannot close without urging upon you the advisability of putting into the rural schools the topics directly relating to agricultural and farm life.

If the boys and girls are to know the value of their native soil and how best to make use of their environment, where can they better begin to learn these things than in the public schools? Over fifty per cent of the population are educated in rural schools. The greater part of these leave school and follow the pursuit of agriculture. This is a matter then in which we all feel a deep interest. There is, therefore, much cause for congratulation that in so many different states and under such a variety of conditions honest and substantial efforts are being made to test the usefulness of agricultural instruction as a means of improving country life and perpetuating agricultural prosperity.

AGRICULTURE IN COUNTRY SCHOOLS.

How Page County, Iowa, is Starting the Work.

By Jessie Field, County Superintendent.

One of the best farming communities in the State, four thousand bright country boys and birls, two hundred loyal and enthusiastic teachers, a large number of progressive farmers, and Professor Holden and the rest of the splendid extension department at Ames, have been the assets and the inspiration for the agricultural work that has been done in the common schools of Page county.

The work began in March, 1907, at a county educational rally. Professor Holden was present and in talking to the rural teachers suggested that it would be a good plan for a few of the strongest and most successful teachers, who were really interested in the work, to meet again and make some definite plans for work to be done that spring. These teachers were selected the following week by the county superintendent. They were teachers who had the respect and confidence of the communities in which they taught and who were sure to "make good" in introducing the new agriculture into their schools. Teachers who had good control of their schools, yet held the friendship and confidence of their pupils. These teachers would introduce agriculture in a sane and practical way that all who knew of it would believe it to be a move in the right direction.

The teachers—fourteen in number—met with Professor Holden the Saturday following the county rally. Professor Holden came in with some cornstalks under his arm and spent several hours with the teachers planning for work to be done. Corn was examined and the germination test box explained. There was informality and enthusiasm in the highest degree. Before leaving everyone present had caught from Professor Holden the spirit that is proud to be seen carrying cornstalks. They took this spirit back to their schools. Seed corn tests were most successfully carried out. Some school gardens were made, and work along some other lines carried out.

One day of the teachers' institute was set apart for the report of these teachers on the work done. There was also an address and some actual milk testing by professor Holden and plans were outlined for the agricultural work of the coming year. The reports were most interesting. There was the teacher whose boys had walked five miles in a snow storm to secure the sawdust for the germination box. One who had used his lap-robe on a cold drive home to wrap the precious box and save it from freezing. A brave girl teacher had gone back to her school after supper to build up the fire and keep the temperature of the room even. Several instances were reported of patrons who had been inclined to scoff at first, but who have become more deeply interested in this work and in all the work of the school than ever before. Germination tests in the schools resulted in germination tests in homes where this had never been done before.

At the close of this afternoon conference practically every teacher in the county had caught the spirit and was anxious to take up the work, too. They realized that it could be done; that the children enjoyed the new world it opened up to them; that untold good would result from it to the neighborhoods in which they taught. In fact, one very successful grade teacher came to the county superintendent and said: "How it does make me want to be a country teacher." Yes, it is true that just at this transitional period the country teacher has wonderful opportunities; she is free to carry out her own plans and ideas and her influence will reach far in the making of the splendid country school of the future.

This fall the first work taken up was in regard to the harvesting and storing of seed corn. On the basis of material furnished by the extension department at Ames—I always want to spell the "Extension Department" with large letters, for it is always such a great and splendid help—enough circulars were sent to each teacher to furnish every child with one, which was to be taken home after being considered at school. It was suggested to the teachers that they have each child go into his father's cornfield and pick the best ear of corn he could find and bring it to school with him, where it should be labeled and hung up to dry in the approved manner. After this was done Bulletin No. 77 on "The Selecting and Preparing of Seed Corn" was sent to each teacher and the corn is being carefully studied. Very often the first question that greets the county superintendent at intermission is from some bright boy or girl who asks, "Which ear is the best? We have been waiting to ask you." Before planting time each school will have a germination test, using this corn.

A number of schools also have taken up the study of weeds. They have learned to recognize the common weeds, made collections of seeds, and studied the best methods of exterminating them. We expect to do more thorough work in this later on.

The superintendent has purchased a Babcock milk tester and a complete testing outfit, including a convenient portable case. This is being passed to different schools, both in the country and towns, who wish to learn how to test milk. The demand for it is great. There is a wonderful field of work in this line and the general weeding out of worthless cows could be secured through the schools more quickly and effectively than in any other way. Not all boys are born scholars, but there is not a boy alive who cannot be interested in a Babcock tester and in working with it he will learn more practical knowledge, gain more in accuracy of judgment, than from all the text-books he has ever been compelled to pore over.

This account of our work in Page county would not be complete, or at least the boys and girls in the schools would not think so, unless something were told about "their tulip beds." Three thousand tulip bulbs were divided among the schools of the county, with directions as to the planting and caring for them. The pupils themselves, under the direction of their teachers, planted the bulbs with due regard to soil and drainage. Now, under a covering of leaves, the bulbs are preparing for their bright burst of blossoms which will help beautify every school ground next spring. Tulips were chosen because they are sure to blossom and to blossom before the schools are out in the spring. Also because it was hoped a bright tulip bed in every school ground would help in the campaign for better and more attractive school houses and grounds.

We feel that we have made only a beginning, and can see far greater things to be accomplished in the future along these lines. But we have tried to make our beginning of the kind that counts; to take up the work in a common sense, practical way; to keep close to the ground and get some result from our work; and, above all, to create a public sentiment that will appreciate the value and vital importance of such work in the training of boys and girls. Already there is a greater interest shown in the schools because these things are being considered.

Ian MacLaren said just before his death, "I'll tell you the problem of Iowa is not a political or industrial one; it is the problem of the bairns scattered over your prairies." A weak ear of corn—a nubbin—you can sort out and throw to one side, but if the training of the boys and girls in our commonwealth does not bring out the very best in even the weakest of them, if it does not fit them to deal intelligently and successfully with the very problems they are to meet, then it is time that we made it such that it will do this. That is why we believe thoroughly in this line of work in Page county.

RURAL EDUCATION.

FROM PENNSYLVANIA DEPARTMENT OF AGRICULTURE, BULLETIN NO. 157.

By Dr. A. C. True, Director Experiment Station, U. S. Dept. of Agriculture: Washington, D. C.

Ladies and Gentlemen: It gives me a great deal of pleasure to come to Pennsylvania and, in some slight measure, get in touch with your Farmers' Institute work. You have given me an important subject to discuss, but I shall hardly undertake at this late hour to more than touch upon certain phases of it.

Fortunately, we have had brought before us tonight already the three great elements that enter into education—the church, that appeals to the spiritual life of man; the school, that teaches him how to think and act as a rational being, and the family, wherein he works out day by day the plan of life. All these things must enter into life and unto the education of the man on the farm, as well as the man in town.

Before taking up the question of normal schools we will look at the training of the different branches of these educational institutions. Rural education is a particular subject, and we must have different kinds of institutions to make a full system of rural education. Within the past week I have attended the semi-centennial of the first agricultural college of this country and we have had brought before us very vividly the cause of forwarding the work of our agricultural colleges, which stand at the head of our system of rural education. We are training laborers for the upbuilding of the nation along agriculture lines. We will have a great place in the world along these lines, and this is only one plea among many in the claim for rural education.

Today I spent a few hours at the National Farm School, near Doylestown, in this State, where we have an institution which is training city boys to be farmers. Now, that is an important evolution, and it seems to me they are doing it very well there to a limited number of boys from the town. There is, as you know, a considerable movement of the people from the city to the country, and we will all undoubtedly agree that there is a place for this farm school for city boys, but in between the agricultural college and this farm school for city people there is a great loss to our country people, and we must have other institutions to give them the education they need to fit them for country life, and so I wish to speak tonight briefly concerning this phase of rural education, which we should have in connection with the common schools and the secondary schools.

It will not be necessary now to state why we should have a change in the common schools of the country, but I will say simply that the chief preliminary is to so grade our common schools that they will adapt themselves to the education, the elementary educational study of the modern phases of country life. The conditions under which you are farming, as the older members of this assembly at least will strongly recognize, are quite different from the conditions which existed in the country in past years. Now, to make these country schools what they should be, it is not, in my judgment, necessary that we reorganize our school system. We should rather build on what we already have, and make such changes from time to time as will strengthen our schools and make them better adapted to modern conditions. Some of the changes, however, which I think will necessarily come in the character of these schools are very important in their character. For example, the course of study in our country schools has been one that has tended to draw people away from the country into the city. That has come about naturally enough, because the teachers in these schools have mostly been educated along these lines which are best adapted to city conditions, and we must change that; we must bring into these schools teachers in touch with country life; and country conditions, and we must so grade our schools that they will tend to the promotion of country life, rather than be the instrument for taking people as rapidly as possible away from the country.

There must be, and will come a general improvement in the country elementary schools. There must be some regrouping to make them more efficient. We have heard a great deal about the consolidation of schools. Now, there is no magic in that, and I do not think it is a panacea for the ills of our country schools, but it seems to me that in thinking about that we must face the situation as it is. If we could have the ungraded school with forty or fifty scholars, as they used to have it in the old days, and with a well educated man as the teacher of that school, who had the power to inspire his pupils and direct them in useful lines, then we should not need to propose that we re-group our schools, but, actually, we have schools that are so small that it is not possible in that condition to grade them properly, and because they are so small, because the districts are so small from which the children come, it naturally follows that it would be too expensive to bring the best type of teachers into such cases, and whatever sentiment we may have about the old-time country school, that should not, I think, stand in the way of our regrouping these schools, consolidating them if you will, is order to make them the best kind of schools, and then we can give more attention toward making the situation as it already exists in the schools contributory to agriculture and country life. There is no doubt but that the ordinary studies of reading, arthmetic and geography may be so arranged as to be primarily connected with the work and life on the farm, and when that is done we should change the curriculum so as to make much better schools than we have today, and I think that is possible in these days, and bring into our country schools when they are properly reorganized and provided with good teachers a certain element of nature study, and of agriculture, which will be very helpful in instilling the proper spirit in these schools and in turning the attention of the children to the newer ideas in agriculture to the new, progressive agriculture, and leading them to see that in agriculture itself are found many subjects of study which will be useful to them in their future life, and benefit them in many ways.

I think we should do something to promote the teaching of the elements of agriculture in the public schools and through the association of agricultural colleges and experiment stations, working in harmony with the national experiment station, there has been produced a set of working materials which may be used in elementary schools. I have here a bulletin which we have just issued, entitled "Experiments in Elementary Agriculture." Now, I cannot go into this subject, but I shall be very glad to have you take the number and if you are interested in the matter write to the office of the experiment station for a copy. It is Bulletin 186, of the office of experiment stations, the title being "Exercises in Elementary Agriculture." Now, in this bulletin we have tried to show what may be done with the simplest kind of apparatus, much of which can be made by any boy who can use an ordinary knife, and making the exercises of such character as will be suitable to the common schools. These exercises, I might say, we do not claim any particular originality for. They have been gathered from various sources and most of them have been successfully used in schools. Now, we do not expect that exercises like that can be used in the poorest type of country schools. If you have a school building which it is impossible to heat in winter, of course you can't grow plants in the winter. Some of the exercises can be used in city schools. To make good use of these exercises in a complete way you must have a schoolhouse that is fairly warm through the week and other things of that sort. Then, of course, this is not material which can be used with very young children. It is really intended to be used in a common school which is graded to a certain extent at least, in the seventh or eighth grade. That is, for children anywhere from twelve to fifteen years of age. I don't think I will take the time any more to go into the matter to call attention to its imperfections. Of course, this work has been taken up in a great many places already.

Then, a number of good elementary text-books have been prepared and I am informed on good authority that one of these text-books has already reached an edition of 200,000 copies, and I know it is being used very extensively, and with very considerable success in a number of states. Of course, in elementary schools we can do but little in teaching that which relates directly to agriculture, so we must supplement the elementary school as far as possible with the high school. Now, the high school is practically a new institution in this country, although it is favored with a considerable number of pupils. If you had gone back, I think, about fifteen years you would have found the number of pupils attending high school in this country, but then the high schools were chiefly in the larger cities and did not exceed 200,000 of the entire population. In the course of the next ten years the number had risen to over 600,000 and today we have probably 800,000 students in our high schools. That shows how rapidly people have taken to the idea that the public should support elementary education.

Now, if secondary education is a good thing for the city people, I think a fair presumption would be that it is a good thing for the country people also. Now, the city high schools have been more and more modified to suit the conditions of city life, until today, in many of our cities, we have not only the ordinary elementary studies in the high school, but we have a high school business course, and a domestic course, and a scientific course, and a manual training course, and these are growing more and more popular. Now, in the same way we must have this specialized education for our country people. We must introduce into these schools special studies on the conditions of country life, and in these schools we can teach a considerable amount of agriculture, and subjects relating thereto, and there is no doubt about it; it can be done successfully. It has been done in other countries, and the system of secondary agricultural education now existing in a number of European countries is thoroughly successful. All the students of education that have looked into this matter are, I think, agreed on this point. We are beginning to organize such schools in this country. There have been organized, I think, eight. We have them connected with our agricultural colleges and we have also in a number of places rural high schools.

I cannot enter into a discussion of the best plan. Indeed, I am not sur that there is a best plan. The probability is that we shall come to have high schools with different agricultural courses, graded according to the different conditions in those regions and states. The main point is to get a fundamental elementary education along agricultural lines. We have recently been interested in the department of agriculture, in an effort made last year to establish a secondary agricultural school in a rural community in Maryland, and it may be of some interest to you, if you have not followed that movement, to learn something about that school, which is a little different in some respects from other schools of the same class. There was a rural community in Maryland which found itself without high school advantages and the people began to be waked up and of their own motion want the high school. They took up the question with the school commissioners and the more they talked about it the more they thought they wanted to have agriculture taught in their schools. So they called upon the department of agriculture at Washington and also upon the Maryland Agricultural College, and we found there the first man, a man who had already had experience in teaching agriculture in secondary schools, and so there was established at Calvert, Cecil county, Maryland, a school known as the Calvert Agricultural High School, and Mr. H. O. Sampson was made the teacher.

Now, this finally became a town enterprise, and local people put money into it, the county commissioners making an appropriation, to get the school established. They were also fortunate in finding a building ready for their enterprise, which had been used as a denominational school, and which they were able to obtain at a nominal rent. The school opened on the first Monday in November with thirty-two pupils enrolled, in age from twelve to eighteen year. They were arranged in two classes, the one with what would be the first year in a literary high school, and the other with what would be the seventh grade as a preparatory class. It was thought that one teacher would be enough, but the attendance increased so fast that they were soon obliged to secure an assistant teacher, the attendance finally reaching fifty-two.

This is simply an example to show you what can be done where the people are interested in agricultural education. That school has the ordinary high school course—a considerable amount of English and mathematics, some literature, and science and history. In the last two years they have either a modern language, German, perhaps, or Latin, if they prefer it, and after the pupils have completed the course they are entitled to admission to the Maryland Agricultural College. Now, the agricultural part of the work includes text-book studies, talks by the teacher supplementing this, and also demonstrations and experiments in practical agriculture, tree-growing and pruning, corn growing, stock judging, and so far as possible, the ordinary studies are so planned as to co-relate with the agricultural studies, so that with arithmetic and physical geography they also have agricultural work. Then, during the first year, special prizes were offered to create more interest in agriculture. Then an agricultural program was given, in which outside speakers tried to interest the people in Farmers' institutes. This was held in a little town about four miles from the school, and the school went out there in big farm wagons and the boys showed how they could judge corn and stock. Now, one of the most interesting things about this school is the number of pupils who took no interest in the ordinary school course, but when they found something doing in regard to agriculture, they came to school and became greatly interested, and more than this, the establishment of this school has led to the organization of a large number of elementary classes in agriculture in the surrounding schools. I wish I had the opportunity and could go into this matter further with you, and tell you more about this school, but that will be impossible at this time. We will, of course, be glad to give you any information about this matter if you will write us about it.

These are, in a general way, the lines in which I think we ought to work; that is, first in elementary schools, then by the establishment of these secondary schools, in which agriculture shall be taught, and which shall be chiefly a preparation for actual farm life, and, of course, if you once get these secondary schools, they will be a good preparation for our agricultural colleges.

Now, as to the situation here in Pennsylvania, I have given it a little attention and I think you are ready for the advance movement along the line of rural education. You have, I understand, made a very large appropriation for schools, and for good roads. Now, these two things go together. You have your high schools, which you can proceed to reorganize for agriculture, and you are reorganizing your agricultural college with the idea of making it more efficient as a college, and of allying it more closely with the educational system of the school, so it will be able to help in this movement for the improvement of rural education. You are bringing into this State, to the head of the agriculture at your State college, one of the best teachers of agriculture in this country, and I am sure if you are loyal to him, he will do a great work here in reorganizing along these lines. The United States has been doing its part to help you by increasing the national appropriations to the agricultural colleges and schools, and to what better use can these appropriations be put than to training the teachers for these elementary and secondary schools, and I understand that the colleges in this State, like the colleges in other states, is considering a plan now for carrying out that part of the work. Among other things I understand you are thinking of summer schools for teachers. Now, it is possible for the intelligent teacher in a summer school course to go through all the exercises that are contained in this bulletin, and that is enough for a year's work in elementary agriculture, so it is possible to help your teachers very greatly if they will attend these summer sessions at the agricultural college and get in line with this movement in education.

At this late hour I will not undertake to go further into this matter. I thank you for your patient attention and shall be glad, through the office of the experiment stations, to give you any information which you judge may be useful to you in this great work.

THE SUCCESSFUL FARMER'S EDUCATION.

From Pennsylvania Department of Agriculture, Bulletin No. 157.

By Prof. Wm. G. Owens, Lewisburg, Pa.

Before trying to discuss the subject, it will be necessary to determine what we mean by a successful farmer. Is he a success who knows not what goes on in the great world around him, who living in the Twentieth century uses implements of the Nineteenth and the methods of the Middle Ages? Is that man a success who, working early and late, without taking time to enjoy life as he goes along, becomes so overpowered with greed for gain that never a kind word is spoken or a gracious act performed unless he can see a dollar in it? Or could you call that man a success who, by fair means and foul, has added acre to acre, farm to farm, until he owns a vast tract of land? Is he who makes a simple living only or he who acquires wealth always a success? The questions are a sufficient answer.

Whom then can we call a successful farmer? He is the best farmer, as he is the best citizen and the best man, who can make the best use of every opportunity that presents itself, who uses his brain to save his back, who is interested in and is kind and helpful to his fellow-man; who makes a cheerful home where wife and children are contented and happy, enjoying to the full the many good things Providence has placed within his grasp. What things are required of a successful farmer? The demands today are varied and numerous, and to prepare for them requires an education of no mean type. The competition of the times and the scarcity of help require that the farmer should be able to use the latest and most improved machinery in all branches of farm work. Most trades today are specializing, each man is doing a small part of the work in any industry, but with the farmer it is just the reverse. There was a day when the mechanic in the shop was a man of varied accomplishments. He could run any machine in the shop or do any kind of work. Now he runs but one machine. The day was when a shoemaker made shoes; now he only repairs them. The shoe is made by many different hands, each doing but a small part of the work on each shoe. From Monday morning till Saturday night the man at the last does nothing but drive pegs until it becomes second nature to him and requires no mental effort on his part, but he moves like an automaton. The watchmaker once made watches, cutting out every wheel, fashioning every part, and the watch had some individuality, but now brass rods are fed into a machine and at the other end come out wheels cut and polished, ready to be assembled into a watch. Ten thousand of them, all alike, interchangeable of course, therefore easy to repair. But in a thousand no one could discover a difference except in the number stamped on each. All character and individuality has gone not only in the watch but in the watchmaker as well. The same has happened in nearly every trade. The individual has become a machine or the machine has taken his place.

On the farm how different? While there has been a change it has been in the opposite direction, to broaden the farmer's sphere of action and make him a more all-round man. Fifty years ago the farmer alone, or with the help of a blacksmith, could make most of the tools used on the farm. The plow, harrow and plank drag, the sickle, scythe, wagon and home-made rake, and the fork and flail comprised the farmer's tools. Things so simple required but little skill to keep them in repair. Therefore it was supposed that anyone could be a farmer, and that he needed no education. Then a little scratching brought abundant crops from a virgin soil. But now how changed. What knowledge and skill are required of the farmer today when he must use and keep in repair disc and sulky plows, patent harrows, drills and rollers, binders and threshing machines, hay elevators and silage cutters, engines which take the place of an ox and horsepower, and a score of other things of which our grandfathers never dreamed. To successfully handle these machines requires a skill far surpassing that required by the so-called mechanic in the shop, who only runs one machine or does one operation day after day for months and years. The farmer of today must be versed in practical mechanics. When the binder breaks he must know how to fix it. Many farmers are near water power which could be converted into electrical, to be used in house and barn. Or the alcohol engine may soon be a factor on every farm, and the farmer must understand them all. As help becomes more scarce these sources of energy must be employed.

The farmer of the future must understand breeding. He will not raise scrub stock as his father does today. No other calling would or could stand such a drain as the profitless cow and hen impose upon the farmer today. When the farmers realize that today half the cows in the United States do not pay their keep, and that it is within his power to make each one yield a handsome profit, then he will begin to do something to improve his stock. The scrub cow belongs properly to the scrub farmer, and that man had better move to town. Of course a high breed cow or horse will not stand abuse like a scrub, but needs intelligent care. This can only be possible through a knowledge of animal physiology.

If he goes into the raising of fruit he finds as much need of brains as in any other branch of farm industry. The varieties suited to his soil, climate and market, the insect and fungus pests and how to keep them under control, the proper culture and marketing of fruit all call for an ample supply of brain power. In the feeding of both cattle and land the farmer in Pennsylvania is so well protected by the law that he need not be cheated in what he buys, nor wasteful in what he uses, but to calculate a balanced ration for field and feed room requires that the farmer should have some idea of chemistry. To produce, keep and successfully put upon the market the various mill products and to properly construct his home and other buildings, it is almost necessary for the farmer to be a sanitary engineer. If the consumers in our cities only knew how much of the value and the enjoyable quality was lost and how much filth and other poisonous material was introduced through the improper handling of the dairy products they would think twice before they buy. The farmer must also be a business man. Not only must he be able to produce in the most economical manner something which will bring the highest price, but he must be able to put it on the market in the most acceptable manner. He must also be an experimenter. From the first paper presented at this institute we have been constantly told that the men who are successful are those who experiment, observe, ply nature with questions and are able to get from nature the correct answer. That this is no easy task is seen by the fact that college professors and experiment station experts often hold opposite views on the same subject, and the institute lecturer is often at a loss to know what is the truth or the best practice. He must keep account of what it costs to produce, and he must have the nerve to cut off or change that which does not realize a profit.

Not only this, but as the making of money is not the final end of the farmer's existence, though an important one, there must be a broad and kindly spirit which will enable the farmer to enjoy life and help others to do the same. The rural delivery enables the farmer to have his daily paper at his noon-day meal and so keep in touch with all the world. He must be prepared to act on the school board, or go to the Legislature if his neighbors think best, and be a leader in the community. If these points which I have mentioned are essential to a farmer's success from a financial, social and political standpoint, what kind of an education will he require? I can imagine someone saying, "That would mean a college education, with half a dozen years in the graduate schools." While I do not agree with the sentiment that a college education will ruin a good farmer, and would go so far in the opposite direction as to say that every good farmer would be improved by a college education, nevertheless I believe that public schools should furnish an opportunity to every farmer's boy and girl to get all the schooling necessary for a successful life upon the farm. What the country boy needs is thorough grounding in the rudimentary elements of knowledge in the several branches of science. Where did the leaders who do the actual work in the cities come from? In the vast majority of cases from the country.

That he can acquire and use this knowledge is abundantly proven when we look at the leaders in every branch of life today who have come from the farm. No calling is without them, no trade could get along without having its ranks constantly recruited from the country. The education which this condition demands is a thorough common school course devoted mainly to those branches which the schools will use in later life. But you ask, Is such a course possible for a farmer's boy and girl in a rural community? I answer yes; it is. The farmer's boy and girl are entitled to just the same advantages that the children in the towns and cities enjoy; first, because the farmers are the great producers of the wealth. They take it first hand from the earth. As most all other branches of industry are dependent, directly or indirectly, on the farm, what would become of the town if the farmer should disappear? Why do we have great railroads, which have turned themselves into gigantic trusts, if not to haul the produce from the farm? Mills and factories are built to work up the farm products. The iron and steel industries exert to a large extent to house, transport and manufacture that which is yielded by the farm. Let one crop fail over an extended area and every trade and occupation feels the effects. A failure of a single staple crop would mean failure and widespread ruin. Should not, then, those who manage the most important factor in the country's prosperity receive the best education possible? Today every town and village has its high school, and in the cities many of them are better than the colleges were a few years ago, but the country, on which the nation depends for its prosperity, has the same old school that was the pride of the community a century ago. It has the shortest term and the poorest schools. The teachers are the cheapest, and often the most inefficient, the schoolhouse poorer still, while the equipment is the least the law allows. The millions in the city depend upon the farm, yet every man's child has the opportunity to get a good education except the farmer's. It has long been the disgrace of the country districts that the cattle and horses are better provided for and trained than the children. Farmers who have ventilators in their barns have been known as school directors to vote against putting modern heating and ventilating systems in the schoolhouse because it cost too much. A few months in the year when the weather is the coldest and mud and snow the deepest is the only time the country children have a chance to prepare for life's work.

As a second reason, it may become necessary in the near future as a means of self-preservation. A few years ago Dr. William Cook, in a lecture before a British association, showed by statistics that as man advances in civilization he requires a wheat diet, that about all the land adapted to the growth of wheat is under cultivation, and that unless more grain can be raised per acre the wheat crop will soon be below the demand. He suggested the fixation of atmospheric nitrogen as the remedy. May it not be possible that a cheap source of nitrogen will not alone solve the problem? Would not more intelligent farmers who could understand and apply the laws of nature be a more likely solution than the mere cheapening of a fertilizer? If what I have said is true the successful farmer's education demands that the future farmer and his wife should be educated in the elementary principles of mechanics and electricity, to understand the machines which he has to handle, and enough chemistry must be added to enable him to understand and work out a balanced ration or a fertilizer; bacteriology and sanitary science so that he may combat the lower enemies which are on every hand; mathematics and bookeeping sufficient so that he can keep account of the profit and loss account; enough of nature study that he may find pleasure as well as profit in observing what is going on around him and make and interpret such experiments as will improve his crop production. Enough independence should be installed that the young man may think for himself and be able to cut loose from the methods used by the forefathers and try up-to-date methods; enough history, literature and art to make the farmer's boy and girl appreciate the surroundings in which they live and the country life around them, so that they will appreciate their surroundings and not be in a hurry to go to the cities where they can make a few more dollars.

This, it seems to me, is what the successful farmer's education demands. This, I realize, would necessitate a great change in our common school system, but you see with few exceptions it is only trying to teach the children what the Farmers' Institutes are trying to teach the farmer and his wife. We all realize that "it is hard to teach old dogs new tricks." The time to inoculate new ideas is during the years of school life. Then all could be reached. What a small percentage of the farmers now get any benefit from the instruction which the state so liberally supplies in the institutes. Centralizing rural schools would be necessary. The cost of education, in the long run it would be an investment that would pay well and of which we could well be proud.

A Memeber: I would like to ask a question. In the township high schools, which are coming, would you omit literature, Latin, algebra, geometry, etc.?

Professor Owens: As far as literature is concerned, no; so far as Latin is concerned, yes; I would substitute French or German or some other modern language for it. I think geometry should be omitted, but I would put in algebra. My reason is this: By taking French or German one can read some of the best literature in these languages and get the same exercise for his brain as he would get with Latin. The same thing applies to algebra. Some of the best problems are worked out by algebra. As for geometry, it is not so much in demand. This covers what I think we are trying to teach at institutes. Now, you get the farmer to understand that he is not a slave, that life is not only a matter of money, and you lift him out of the rut and put him on a higher plane of living. To do this you need literature. It will help to keep the young men on the farm, and our girls will not care to rush into the factory, where they may not make quite as much as they do in the kitchen, but where they have no brain work. It does not take nearly so much brains to make a stocking as to make a cake. If a girl works in the kitchen she has to use her brains; she has to make a cake; then she has to make bread, and so on.

THE FARMER'S BOY AND WHAT BECOMES OF HIM.

A. M. Leichliter, Spencer, Iowa, Before Clay County Farmers' Institute.

He is a factor that has to be reckoned with. He is by no means a nonentity, and must not be treated as such. He is very much in evidence on the farm, and oftentimes elsewhere. By birthright he belongs to the farm, and by the right of inheritance or succession the farm ought some day to belong to him. Whether it does or not will depend upon himself more than upon luck or chance or upon any other person.

There comes a time early in the life of every boy when he knows a great deal. He cannot learn very much, for he already knows everything that is really worth knowing. About this time he begins to wonder why Father is always scolding him about the way he does his work, and why Mother is everlastingly lecturing him about his personal habits and his company. In fact, he comes to think of himself as a very much abused person. He reflects upon the drudgery of the farm. He envies the town boy his good clothes, soft hands and easy ways, and comes to the conclusion that he was never cut out for the farm. He therefore resolves that just as soon as he is of age, or, better still for him, as soon as he can buy his time, he will quit the farm and seek his fortune in the city. It is often disastrous enough for the father, after years of economy and discipline on the farm, and after accumulating a modest competence, to leave the farm, move to town and take up the role of the idler, but for that boy, without the fortune, without the discipline, and often unaware of the many temptations and pitfalls in the city, such a career is extremely hazardous and often disastrously so.

But "that farmer's boy" is just like any other real live boy. He has desires, ambitions and hopes that must be satisfied. He has industry, push and energy which must have an outlet. He has genius and inventive powers which must have a scope. Give the boy a chance is as wholesome advice today as it was when it was first given. But of what does that chance consist, and where is it found. At the present time, when vast fortunes are made in a day and often lost in an hour, the question should confront everyone, Along what line shall my efforts be expended and where shall the field of my operations be? The get-rick-quick schemes may be very fascinating, but they are extremely deceptive and dangerous. It is therefore wise for the boy to seek or have sought for him that line of business that will be safe.

So farm life may seem irksome and plodding to the boy, and he may be enticed to the city to try his fortune, forgetting that in such a career he has the sharpest competition by competitors who have been long in the business. On the farm the only real competition he has is the example of the thrifty farmer who is only an incentive by his successful methods to help the boy to succeed.

But it may not be best for our farmer boy to stay on the farm. He may have real talent along other lines, and if it be bad policy to spoil a good farmer to make a poor preacher, teacher or business man, it certainly is just as bad policy to spoil a good preacher, artisan or inventor to make a poor farmer, for a boy whose genius is crying out for liberty of action along some other line will make nothing but a poor farmer.

What, then, shall be done with that boy?

First try to find out what he has real talent for. Then develop that talent and help him get to the top. But at any rate give him a liberal education. If he is a farmer it will do him no harm to go through high school and college. Just recently someone has published the result of extensive investigation in which he declares that in all branches of industry the facts show that college men attain a greater degree of success than those without a college education. In the present day a fair knowledge of the common branches, mathematics and bookkeeping are almost indispensable to the farmer. Then he needs to learn soil properties and their adaptability to different crops. These things he may learn by experimenting on the farm, but he will learn them much more quickly and thoroughly under proper teachers in the proper schools.

Some months ago the Young People's Weekly told us of a man bowed down under the weight of debt and hard work, while the soil of his little farm yielded less bountifully year by year, while the mortgage grew no less. But one day his son John came home from Agricultural College to help his father and assume the heavy responsibilities, and the father, worn out, eagerly submitted to John's new methods. It was soon found that the farm which formerly had yielded a very light crop was now yielding three times as much and of a far superior quality. What is most needed by the farmers today is not more farming, but *better* farming; not more land, but a better use of what they already have; more care in the selection of profitable crops and stock and in cutting out the unprofitable; better cultivation and more fertilization. Once wheat was grown here in abundance; now there is scarcely any grown, simply because experience has taught the farmers that it doesn't any longer pay. The years to come may and undoubtedly will reveal the fact that some of the things now raised on the farm and some of the methods employed now will no longer pay. The boy ought to be taught these things.

Above all, teach him the sanctity and blessing of his calling as a farmer, and that in times of financial disaster the farmer "surest sits and fears no fall."

KEEPING THE BOY ON THE FARM.

Breeders' Gazette.

A few days ago I overheard a conversation between two lads of some fifteen or sixteen years, sons of two prominent farmers who have large fields overflowing with the fruits of nature and teeming with golden grain. One of the boys was stating to the other what he was going to buy with the money which he was soon to obtain from the sale of an aged sow and her six young ones. The boy said his father allowed him the privilege of rearing and of having "for his very own" several pets each year, and the pets were usually young pigs which were weakly and would soon have died had the boy not rescued them and raised them by hand. In this way he acquired quite a great deal of spending money and generally put it to a good use, investing in other lines of farmer boy business which his father always referred him to.

But alas for the other boy! It seemed to him that no matter how diligently and faithfully he worked, and how fond he was of a pet that he could sell and have money, his father would never give him a pet, nor even a tiny runt, and generally remarked when the boy would ask for some spending money, that "his boy spent more money for foolishness than he had during his whole life." The facts seem to show that but few were the nickels and dimes that this prominent farmer gave to his son. The lad was not satisfied, and no one could blame him, for when a boy works hard all day from 5 in the morning till 7 at night he feels that his work should be appreciated and that he should have some slight recompense for his labor.

I do not insinuate that he should be paid a regular amount for his work, as he is not a hired man by any means; but this particular lad would have felt better, had a greater respect for his father, worked better and, last but not least, would have stayed on his father's farm longer, if he had been allowed to have a part of the gains from the farm. It would have made him feel that in later years, when he was in the very prime of life and his father being old and unfit to manage the farm, it would be his duty to stay and manage in his father's place. But where one will stay hundreds will leave for the city, the factory, the mill—any place almost where they can feel that their labor is worth a just and liberal pay.

It is no wonder then that farmers are often heard to say: "I do not know what's getting into my son John's head; he acts like he does not care whether he works or not." But the old farmer cannot awaken to the fact, it seems, that times have changed since he was a young man, and the young man of today should be equal to and in some cases ahead of the old man of fifty years ago. It is true that the farm may be left to him when his father is gone, but would not he work better, feel better and take better care of the estate if he had been allowed to help earn it instead of getting it given to him?

The outside world appeals to a healthy, ambitious young man, and it should, but in a way that comparison between the farm and the city will bring out the advantages of both. While it is true that our country's greatest men have come from the farm, it is also equally true that the farm has use for these bright and energetic young men.

The time is coming, if indeed it is not already here, when it will take a man of considerable education and business ability to be a farmer, and why not give the young man a chance, from the very first school—the home? There is no more independent and healthful occupation than that of farming, and if this be so it would be to the father's, the boy's and the whole world's benefit to keep the boy on the farm. Give him an opportunity and watch him develop and I am sure he will "do his best and leave the rest to Providence."

SOIL MANAGEMENT IN RELATION TO THE PERMANENT PASTURE.

By W. H. Stevenson, Iowa Agricultural College, in Wallaces' Farmer.

Within recent years so much has been spoken and written regarding the relation of crop rotation to the maintenance of the fertility of the soil that many farmers who own high-priced land now question the advisability of keeping their permanent pastures.

Much effort and several years' time are required to secure a first-class blue grass pasture, and therefore it is well worth while to attempt to understand the true relation of the permanent pasture to the other features of the farm before the plow is permitted to turn over a well-established sod.

In the first place, there are many farms on which there is land which is well suited to permanent pasture but which is not desirable or profitable for rotation; such areas, for instance, as hilly land or land that is broken up by wet spots; land with sandy or gravelly out-crops; land which is subject to periodical overflow and that which is so located with respect to the improvements on the farm that it cannot be economically cultivated. It is nearly always a mistake involving financial loss to change areas of this kind from pasture into cultivated fields. On lands of this class the permanent pasture is of special value for the reason that corn, valuable as it is for feeding purposes, is not a complete ration. The breeding stock, the young animals and the dairy cows on our farms must have a variety of feed stuffs if they are to be kept thrifty and in the most profitable condition. And high-priced land, high-priced labor and high-priced feed products of all kinds make it essential that the cost of maintaining this stock in this condition be made cheaper by means of the rations which are used and the methods of handling which are employed. We believe that the permanent pasture affords the most practical means of accomplishing this end; first, because a good pasture furnishes, at a comparatively low cost, the constituents which balance the corn ration, and, secondly, because such a pasture makes it possible to extend the grazing season from two to three months in the year, except for dairy cows—a condition which lessens the amount of labor expended in caretaking, and which tends always to promote the health and vigor of the animals.

No doubt the majority of land owners agree with this proposition that a considerable area may with profit be devoted to the permanent pasture on farms which are more or less broken, but there are a goodly number who contend that land which is worth a hundred dollars per acre is worth too much to be kept down in grass. For two reasons we are convinced that a first-class pasture will pay on hundred dollar land. In Great Britain land which is worth three or four times this amount is devoted to grass crops at a profit; second, when a considerable area of our farm lands is kept seeded down and relatively less is used for corn and small grain production we are following lines of soil management which more than any others tend to maintain our farms in a high state of productive capacity. So much regarding the value of the pasture as an investment. It is well to note, however, that only well-kept pastures are profitable on high-priced land. But far too many pastures, possibly 75 per cent of the entire number, are not well kept. As a rule, the farmer gives less attention to the work of maintaining his grazing lands in good condition than he gives to any other portion of his farm. Consequently many pastures are poorly drained, have a poor stand of grass, are overrun with weeds at certain times of the year and yield crops which are very far short of those which the same land is capable of yielding under proper systems of soil management. But, fortunately, it is possible to improve these pastures.

Thousands and thousands of acres of pasture land need drainage. It is difficult to understand why so many land owners persistently fail to tile drain their wet pastures. Pasture lands respond to drainage just as certainly and with as great profit as cultivated lands. Sweet, palatable grass, in maximum quantities, is found only in well-drained pastures. Therefore in many instances adequate drainage should be the first step in the line of improvement.

Again, many pastures have a poor stand of grass, in many cases not to exceed a half stand. Neglect, a lack of plant food, and too close grazing very often bring a pasture into this condition. An earnest effort should be made to improve the stand without delay, for a poor stand of grass, like a poor stand of corn, cuts down the profits to a greater extent than is understood by the average farmer. In order to get grass on the bare spots where weeds have taken possession and on places where the grass is thin and lacks vigor, do not plow up the entire pasture with the thought of reseeding with blue grass and other grasses. The chances are that the old pasture, if properly treated, will be superior in a year or two to the new pasture after the lapse of one or two decades. The better plan is to thoroughly disk and harrow the spots which are weedy or thin; do this in the spring, just as soon as the frost is out of the ground. There should be no half-way work with these implements, but the surface of the ground should be thoroughly cut up and loosened. In other words, a first-class seed bed should be prepared. This treatment of the land will not destroy the sod, although it may seem greatly injured But this is not enough. Additional treatment is essential for the best results. Clover and timothy seed and alsike should be sown on the disked area at the rate of two or three pounds to the acre. An improved condition will be noted in a few weeks. The blue grass starts with increased vigor and the other grasses rapidly thicken the stand and afford many a palatable mouthful of nutritious feed. A portion of an old blue grass pasture which was sod-bound and which yielded very light crops was treated in this way by the owner a few years ago. The field was not pastured heavily for a time; it is estimated that the productive capacity was nearly doubled the first season and that the land was brought into a condition which would tend to maintain some such increase for many years to follow. The treatment which was given this Illinois pasture was not expensive, but it was effective. Cannot thousands of other pastures be improved with equal success? The disking and harrowing loosen and mellow the soil, thus making possible a more free circulation of air, the grasses crowd out the weeds and furnish valuable forage, and the clover furnishes the blue grass a more or less liberal supply of nitrogen and there are not many old pastures which are not in need of this element of plant food.

These facts seem to warrant two conclusions: The permanent pasture, when kept in good physical condition, with a perfect stand of grass, and when not pastured too closely, is one of the most profitable parts of the farm, even though the land is valued at one hundred dollars an acre. Secondly, continued neglect makes it an unprofitable area. No doubt the better method of soil management in the latter case would be to abandon all idea of keeping a permanent pasture and to bring the land under rotation.

RESTORING AND MAINTAINING THE FERTILITY OF AN IOWA FARM.

William I. Raymond, St. Charles, Iowa, Before Madison County Farmers' Institute.

That old proverb, "Necessity is the mother of invention," I feel, applies to me to a certain extent. Perhaps if it had been quoted, "Necessity is the mother of investigation," it would *better* have applied to *my* particular case. As for myself, there is not much invention in my make-up; but I find it quite a pleasure, and perhaps profitable, to investigate, by reading and putting into practice what *others* have invented or discovered. Therefore, as we found ourselves some years ago located on a run-down and impoverished farm we saw that *something* must be done; and so, if it be in my power to interest you for a few minutes on this topic, you see it is the *surroundings* I find myself placed in which must get the credit.

We are *all* familiar with the term crop rotation, but perhaps we are not all so well posted on just what the *full meaning* of the term implies, or the alleged benefits to be derived from its practice.

Scientific men find that one crop takes a certain element from the soil; another crop takes another, or a certain number of other elements, and so on. Therefore, it will be seen that by changing and having a knowledge of what elements it takes to *grow* a certain crop, and also a knowledge of the elements of growth *contained* in fertile soil, it is possible to follow one crop with another which takes different properties of fertility than the preceding one, with benefit to the crop as well as to the producer. But if it were so that there were only a certain amount of fertility or elements of crop growth stored in a given soil and there was no way of getting an additional supply, even by rotating intelligently, we would soon be, as the boys say, "up against it." But we find the soil is not the only storehouse of fertility—the very air is a vast storehouse of certain elements of growth, which we may, and do, draw upon to our benefit, more or less, as we understand the structure or elements of the different crops.

To illustrate: As you perhaps know, wheat, Indian corn, oats, etc., draw their elements of growth almost entirely from the soil, while the scientists tell us, and we find it works out in practice, that that list of crops called the legumes—clover, cow peas, etc., draw the most of their substance from the air and not only make the present crop but store up certain elements in the soil for the use of the future crops of corn, wheat and such crops as do *not* draw fertility from the air.

Now we are told by our experiment stations (and we know it ourselves if we only stop to think of it) that even an intelligent system of crop rotation is only a clever trick on the part of the farmer to draw the supply of available fertility stored in the soil out the quicker. In that case, what is the remedy? Do not sell anything off of the farm that can be fed at home. Do not sell your raw material, but sell the finished product. You would think the manufacturer needed a conservator appointed who would sell his raw material as soon as he received it, instead of making it into a finished product.

We find by reading the station bulletins that when we sell one ton of corn we sell in it fertilizing ingredients which if purchased in the form of commercial fertilizer would cost us $3.78; one ton of timothy hay, $5.10; one ton of wheat, $7.91; one ton of clover hay, $9.07, etc. Now, if these crops are fed to animals upon the farm it is found in the mature animals, which are neither gaining or losing in weight, that they return to the soil practically *all* the fertilizing ingredients contained in the food consumed; growing animals and milk cows, from 50 to 85 per cent; fattening or working animals, 90 to 95 per cent. Now, to go a step farther; if it pays to feed what we *grow* upon our farms it pays to *buy* additional feeds and fed them for the manurial benefits to be derived, for it is assumed that we will get a profit from the feed bought, through marketing the animal, besides being ahead on the fertilizing question.

To guide us a little on what feed to purchase, from a fertilizing standpoint—that is, to see what kinds of feed give us the most manurial value for our money—let us again consult the bulletins and quote: "As regards the value of manure produced, the concentrated feeding stuffs, such as meat scrap, cotton-seed meal, linseed meal and wheat bran stand first; the leguminous plants (clover, peas, etc.) second; the grasses, third; cereals (oats, corn, etc.), fourth; and root crops, such as turnips, beets and mangle-wurzels, last." And, by the way, the feeds which we find have the largest manurial value have also the largest protein content, which food element is the most expensive for the farmer in Iowa to obtain.

It builds lean meat and muscle; also the hide, hair, etc., or, in other words, the growth of the animal.

Now, after studying out an intelligent rotation of crops especially adapted to our particular soil, and feeding it to farm animals that are adapted to give us the largest return for the money invested, both in money and fertilizer, then, if any foods *are purchased* which cannot be grown at home, *buy* those which are known to return, after being fed, the largest amount of fertilizer for the money invested in the feed.

Then, after doing all this, see to it that every particle of manure is saved and applied back to the soil, the quicker the better. Draw it out every day if possible, and if it is undertaken you will be surprised to find how nearly you can accomplish what you undertake. And another point in this connection: Commercial fertilizers if *purchased* and *applied* fall short of the benefits to be derived from *farm manure*. They supply elements of fertility, nothing more, while barn manure contains the *same* elements of fertility (if properly taken care of or applied when first made), besides having the additional effect of being mechanical in its action, inasmuch as it adds *humus* or *vegetable matter* to the soil, which, by the way, is what is lacking in the most of our depleted soils, rather than the fertility. The humus makes a heavy, compact soil light and pliable, lets in the air, enables it to take up more water, also to hold moisture longer during drouth, etc.

If you will bear with me a few minutes longer I will try to give you a working plan as to how the above theories, or truths, rather, are applied to one Iowa farm. Said farm is divided into three fields where all tilled crops are raised, besides there being a permanent pasture for cows and horses; also hog pasture which will enter into the rotation if need be. Every morning, when the weather permits, which is, happily, most of the time, the team is hitched to the spreader, the barn is cleaned into it and the manure hauled at once to the field, which is in meadow to be followed by a crop of corn the following year. We have a field of corn each year, one of oats or barley and one of clover. It takes three years to complete the rotation. We find that first the oats, being a shallow-rooted crop and drawing lightly on fertility, do fairly well on a run down soil; the clover crop which follows takes nitrogen, a very essential element of fertility, from the air and deposits it in the soil; the roots also grow to a great depth and aid greatly in opening up the subsoil so that drainage is increased; then, when this field receives its coat of manure we have added all the elements of crop growth, also the much needed humus.

We feed everything raised on the place, besides buying considerable supplementary feeds which we find have the most protein and manure value. We stable or house all animals and save all the manure possible, with the result that in a comparatively short time our farm, from being called the worst farmed-out farm in the country (it being one of the oldest) will now produce crops with the newer farms, and while still gaining in fertility, under the present system, it has and is producing an income equal to the best.

A GOOD SEED BED FOR CORN AND HOW OBTAINED.

By A. Member, Before Linn County Farmers' Institute.

It has been said, "The first reform needed in American Agriculture is to feed the soil better, and the next reform is to till it better," and in these days of high-priced land it is surely the better plan to try to produce morn corn per acre than to produce more acres of corn.

Agricultural writers are trying to impress upon our minds the importance of good seed corn. Our institute speakers are also trying to force the same fact home to us, but no matter how good the seed it must be planted in a good sed bed to bring proper results. The ground must be well prepared or it will be impossible to get an even stand, and young corn plants will not thrive among clods or where the soil is not in good tilth.

An ideal seed bed for corn is one where there is an abundance of plant food and where the soil is in good physical condition (mellow, free from lumps, porous and warm). To get this ideal seed bed we must practice a rotation of crops with clover in the rotation. The clover plant is a great soil restorer and renovater. It takes nitrogen from the air and stores it in the soil for the use of the future corn plant. Its roots delve deep into the earth and bring up plant food from below, and when the roots decay places are left for water and air to enter the ground and get the soil in the best of physical condition.

In plowing a piece of land for corn it is not as important to plow at some particular depth as it is to do a good job of plowing. The man who "cuts and covers" when plowing will not have an ideal seed bed. Fall plowing is preferable to spring plowing, except in certain circumstances. Rolling land, if plowed in the fall, washes badly with the spring rains, and some stiff clay soils when fall plowed "run together." Under those circumstances it is better to plow in the spring.

One of the best means of getting a good seed bed is to harrow down the newly plowed ground each day after the plow. Harrowing after the plow fines the soil and conserves moisture and does much to keep the ground from being cloddy. Many farmers nowadays have a light section of a harrow attached to their plows and harrow as they plow, and that certainly is a method that is worthy of imitation.

In preparing a field for corn which was in corn the year previous it is important that the field be thoroughly disced before the plow. The stalks should be cut up by the disc and plowed under instead of being burned, as there is need of humus or decayed vegetable matter in the soil. Discing breaks the surface crust so that when turned by the plow a better connection is made with the lower soil, allowing the moisture from below to work up freely to the young corn roots.

Fall plowing should be disced as soon as dry enough in the spring, so as to break the crust and keep the soil from baking and becoming hard and lumpy and out of condition.

If the ground gets packed by rains before planting time it should be loosened with the disc before seed is placed in the ground, as corn needs a loose porous seed bed.

Do not start the planter till the ground is in first-class condition, and do not be afraid of working the ground too much. The nearer ground can be gotten into garden condition the better will be the yield of corn.

Frequent stirring of the surface warms the soil. At one of our experiment stations, by a thermometer test, it was found that a piece of cold ground cultivated with the disc was much warmer than another alongside which had not been stirred at all, and this fact is surely a good argument in favor of frequent stirring of the soil, as corn in the early stages of its growth needs all the warmth that can be obtained for it.

In conclusion I will say that "in a nutshell" the way to obtain a good seed bed is to have good soil, well plowed, followed by plenty of work with harrow, disc, float or other implements, and mixing the whole thing with brains.

THE MORNING-GLORY.

Wallaces' Farmer.

Morning-glory and bindweed, which is frequently mistaken for morning-glory, belong to a class of weeds which spread from the root as well as from the seed. Cuting off the tops even at the very surface of the ground does not kill them. The ordinary shovel plow cultivator, while killing them in one place, is very apt to plant them in another by carrying the underground rootstocks from one part of the field to another on the shovel.

This is one of a most difficult class of weeds to manage. They can be killed out by strangulation; that is, by preventing the leaves from having access to the air. The rootstocks, not being fed, will necessarily die.

They usually give the greatest trouble in the corn field, and when the field becomes foul give very serious trouble in wheat or oats that follow corn. They can best be attacked in the corn field by a thorough preparation of the seed bed and shallow cultivation. The tools used should be such as would shave them off just below the surface of the ground and leave them on the surface near where they grew. A surface cultivator, or what are known as "glory" blades, and similar devices, that can be attached to any cultivator, is the best thing to use where the field is infested with morning-glories.

When the time comes that farmers have their fields sheep-tight and hog-tight the morning-glory problem will cease to vex us; for either sheep or hogs, if given the opportunity, will strangle them more surely and cheaply than any other process we know of. Some thirty years ago we broke up a bottom farm, a portion of which was badly infested with morning-glories. We made that portion of it a hog pasture, and while the morning-glories grew luxuriantly for years just outside the fence, they never gave us any trouble inside. We will get rid of a good many of our bad weeds when we reach the point of having our fields properly fenced, so that we can utilize them for hogs or sheep when weeds of this kind multiply. Morning-glories prefer good land, but will thrive on poor land, mainly because they are more hardy than the common grasses and multiply even on poor land because the slight growth of other grasses gives them room to grow.

THE COST OF PRODUCING FARM PRODUCTS IN MINNESOTA.

Wallaces' Farmer.

There is a great lack of knowledge at the present time concerning the cost of production on the farm. In fact, most farmers know only in a general way what it costs them to operate their farms from year to year Neither are there many reliable statistics which can be applied to the actual working conditions of the farm. At a considerable cost of time and money the Minnesota Experiment Station, in co-operation with the United States Department of Agriculture, have compiled rather extensive data concerning the cost of producing the various farm products and the cost of the various farm operations. Their data covers a period of three years and was secured from representative farmers from three sections of the state. This data will not apply to sections other than those similar to the upper Mississippi valley, but is of interest to all, as it is comprehensive and can be made valuable to both the tenant and the landlord. We give the gist of their investigations.

The average length of the working day for men on the farms at Northfield, southeastern Minnesota, is 8.59 hours for the week days and 2.89 hours for Sundays; and at Halstad, in northwestern Minnesota, 7.43 hours for the week days and 2.19 hours for Sundays. The average length of the working day for horses at Northfield, southeastern Minnesota, is 3.08 hours, and at Halstad, northwestern Minnesota, 3.30 hours.

The cash value per hour of farm labor ranges from 9 cents in the winter months to 14 cents in the seasons of greatest activity, and an average of all months is approximately 12 cents per hour. Cash value of farm labor is based upon wages paid to men hired by the month or season, plus the cost of their board. The cost of board on farms is approximately $11.00 per month, or 37½ cents per day.

The average cash value per hour of horse labor on farms is approximately 7½ cents. Cash value of horse labor is based upon the cost to the farmer of maintaining the horse. The total cost of feeding and maintaining a farm horse for one year, including interest on investment and depreciation, is from $75 to $90.

The total cost per acre of producing the staple crops of ear corn, fodder corn, hay, oats, barley and wheat is as follows: Northfield, southeastern Minnesota, corn, husked from standing stalks, $11.77; fodder corn, $12.20; clover and timothy hay, $6.97; wild hay, $5.85; oats, $9.48; and barley, $9.13. Marshall, southwestern Minnesota, corn, husked from the standing stalks, $9.96; wild hay, $5.18; oats, $8.83; barley, $8.58; and wheat, $7.89.

Halstad, northwestern Minnesota, fodder corn (shocked in the field), $8.08; wild hay, $2.87; oats, $6.31; barley, $6.41; and wheat, $6.26. Large farm in northwestern Minnesota, fodder (shocked in the field), $7.52; wild hay $2.29; oats, $5.88; barley, $5.97; and wheat, $5.82.

The total cost per bushel of thrashing wheat from the shock at Halstad, northwestern Minnesota, is 7.4 cents, and when stacked and stack-thrashed, 10.1 cents. Oats when thrashed from the shock at Northfield, southeastern Minnesota, cost 4.3 cents per bushel to thrash, and when stacked and stack-thrashed, 5.2 cents per bushel. Thrashing oats from the shock at Halstad, northwestern Minnesota, cost 3.6 cents per bushel, and stacking and stack-thrashing 4.9 cents per bushel. Barley, thrashed from the shock at Northfield, southeastern Minnesota, cost 4.8 cents per bushel, and when stacked and stack-thrashed, 5.9 cents; and at Halstad, northwestern Minnesota, barley cost 4.4 cents to thrash from the shock, and when stacked and stack-thrashed 5.4 cents.

For the majority of farmers stacking and stack-thrashing the grain crops is advisable, particularly so in those localities where labor is scarce and thrashing machinery not readily available. Well stacked grain is cheap insurance against bleached, sprouted and bin-burned grain, and helps toward early fall plowing.

The cost per acre for producing winter forage for cattle in the form of mixed clover and timothy hay is $6.97; field cured fodder corn, $12.20; and the corn silage $18.21, at Northfield, southeastern Minnesota. The use of the more expensive forage crops is profitable only where farms are located close to large cities, where the cattle to be fed are highly bred and highly productive, and when the soil is productive and the crop so well handled as to yield maximum yields of forage (four to five tons per acre of field cured fodder corn and fourteen to fifteen tons per acre of corn silage). Mixed clover and timothy hay, alsike and alfalfa are undoubtedly the most profitable forage crops for a vast majority of the farms of the upper Mississippi valley.

The cost per acre of raising field corn at Northfield, southeastern Minnesota, and cutting and shocking the corn and shredding and husking by machinery is $14.74. The cost of raising field corn and husking the ears from the standing stalks is $11.77 per acre, and a crop of thickly planted fodder corn can be raised and the fodder hauled into the barn for $12.20 per acre.

The most profitable plan of growing a given acreage of corn, partly for grain and partly for forage, in that agricultural region is to devote a small portion of the corn ground to thickly planted fodder corn and the remainder of the acreage to corn grown for ears which are to be husked from the standing stalks, and the stalks pastured off by cattle. Shredding corn stover is a costly practice that should be resorted to only in case the hay crop is badly weathered or other unforeseen conditions demand an additional supply of winter forage.

METHODS OF DESTROYING RATS.

U. S. Department of Agriculture, Farmers' Bulletin No. 297—*By David E. Lantz.*

The brown or Norway rat (*Mus norvegicus*) is the worst mammal pest in the United States, the losses from its depredations amounting to many millions of dollars yearly—to more, indeed, than the losses from all other injurious mammals combined.* In addition to its destructive habits, this rat is now known to be an active agent in disseminating infectious diseases, a fact which renders measures for its destruction doubly important.

Introduced into America about the year 1775, the brown rat has supplanted and nearly exterminated its less robust relative, the black rat, and despite the incessant warfare of man has extended its range and steadily increased in numbers. Its dominance is due to its great fecundity and its ability to adapt itself to all sorts of conditions. It breeds three or four times a year and produces from 6 to 12, and even more, young at a litter. Young females breed when only 4 or 5 months old. The species is practically omniverous, feeding upon all kinds of animal and vegetable matter. It makes its home in the open fields, the hedge row, and the river bank, as well as in stone walls, piers, and all kinds of buildings. It destroys grains when newly planted, while growing, and in the shock, stack, mow, crib, granary, mill, elevator, or ship's hold, and also in the bin and feed trough. It invades store and warehouse and destroys fur, laces, silks, carpets, leather goods, and groceries. It attacks fruits, vegetables, and meats in the markets, and destroys by pollution ten times as much as it actually eats. It carries disease germs from house to house and bubonic plague from city to city. It causes disastrous conflagrations; floods houses by gnawing lead water pipes; ruins artificial ponds and embankments by burrowing; destroys the farmers' pigs, eggs, and young poultry; eats the eggs and young of song and game birds; and damages foundations, floors, doors, and furnishings of dwellings.

METHODS OF DESTROYING RATS.

A compilation of all the methods of destroying rats practiced in historic times would fill a volume. Unfortunately, the greater number of them are worthless or impracticable. Few have more than temporary effect upon their numbers, and even the best of them fail unless persistently applied. Conditions vary so much that no one method of dealing

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[a] Several species of rats are known as "house rats," including the black rat (*Mus rattus*), the roof rat (*Mus alexandrinus*), and the brown rat (*Mus norvegicus*). Of these, the last is the commonest and most widespread in this country. Not one of these is a native, but all were imported from the Old World. As their habits in general are similar, the instructions given in the bulletin apply alike to all.

with this pest is applicable in all cases. Among the more important measures to be recommended for actively combating the brown rat are: (1) Poisons; (2) traps; (3) ferrets; (4) fumigation; and (5) rat-proof construction of buildings.

POISONING.

Barium Carbonate.—One of the cheapest and most effective poisons for rats and mice is barium carbonate, or barytes. This mineral has the advantage of being without taste or smell; and, in the small quantities used in poisoning rats and mice, is harmless to larger animals. Its action on rodents is slow, but reasonably sure, and has the further advantage that the animals before dying, if exit be possible, usually leave the premises in search of water. Its employment in houses, therefore, is rarely followed by the annoying odor which attends the use of more violent poisons.

The poison may be fed in the form of a dough made of one-fifth barytes and four-fifths meal, but a more convenient bait is ordinary oatmeal, with about one-eighth of its bulk of barytes, mixed with water into a stiff dough; or the barytes may be spread upon bread and butter or moistened toast. The prepared bait should be placed in rat runs, a small quantity at a place. If a single application of the poison fails to drive all rats from the premises, it should be repeated with a change of bait.

Strychnine.—Strychnine is a more virulent poison, but its action is so rapid that the animals often die upon the premises, a circumstance which prohibits its use in occupied dwellings. Elsewhere strychnine may be employed with great success. Dry strychnine crystals may be inserted in small pieces of raw meat, Vienna sausage, or toasted cheese, and these placed in the rat runs; or oatmeal may be wet with a strychnine sirup, and small quantities laid out in the same way.

Strychnine sirup is prepared as follows: Dissolve a half ounce of strychnia sulphate in a pint of boiling water; add a pint of thick sugar sirup and stir thoroughly. A smaller quantity of the poison may be prepared with a proportional quantity of water. In preparing the bait it is necessary that all the oatmeal should be moistened with sirup. Wheat is the most convenient alternative bait. It should be soaked over night in the strychnine sirup.

Other Poisons.—The two poisons most commonly used for rats and mice are arsenic and phosphorus, nearly all commercial preparations containing one or the other as a basis. While experiments prove that rats have great powers of resistance to arsenic, it may sometimes be used advantageously as an alternative poison. Preparations of phosphorus sold by druggists are often too weak to be effective; and home-made mixtures, when of sufficient strength, are dangerous, as rats may carry the baits into walls or crannies and thus cause fires. For these and other reasons the Biological Survey does not recommend preparations containing phosphorus.

Poison in the Poultry House.—For poisoning rats in buildings and yards occupied by poultry, the following method is recommended: Two wooden boxes should be used, one considerably larger than the other, and each having two or more holes in the sides large enough to admit rats. The poisoned bait should be placed on the bottom and near the middle of the larger box, and the smaller box should then be inverted over it. Rats thus have free access to the bait, but fowls are excluded.

TRAPPING.

Trapping, if persistently followed, is one of the most effective methods of destroying rats. The improved modern traps with a wire fall released by a baited trigger and driven by a coiled spring have marked advantages over the old forms, and many of them may be used at the same time. These traps, sometimes called guillotine traps, are of many designs, but the more simply constructed are to be preferred. Probably those made entirely of metal are the best, as they are less likely to absorb and retain odors.

In illustration of the effectiveness of traps, it may be related that a year or two ago a large department store in Washington experienced heavy losses of gloves, lace curtains, and other merchandise from rat depredations. For several months the damage amounted to from $10 to $30 nightly. After many unsuccessful attempts to abate the nuisance the managers were advised to try the improved traps. As a result 136 rats were killed during the first twenty nights, when the losses practically ceased, and the method has been continued in the store ever since with satisfactory results.

Guillotine traps should be baited with small pieces of Vienna sausage (Wienerwurst) or bacon. The trigger wire should be bent inward to bring the bait into proper position to permit the fall to strike the rat in the neck.

Other excellent baits for rats are oatmeal, toasted cheese, toasted bread (buttered), and sunflower or pumpkin seeds. When seed, grain, or meal is used with a guillotine trap, it may be placed on the trigger plate, or the trigger wire may be bent outward and the bait sprinkled under it.

Wire cage traps (French) also are useful for catching rats, but in the long run the kinds recommended above are much more effective. While trapping, all other food should be removed and the trap bait should be changed often. Rats are very suspicious, and baits and traps should be handled as little as possible. Increased success may be secured both in trapping and poisoning if the rats are fed for a night or two with the kinds of food to be used for bait.

USE OF FERRETS AND DOGS.

A ferret is useful for the purpose of driving rats out of burrows and other hiding places so that dogs can capture them. An experienced person with dogs and ferrets trained to work together can kill many rats when they are numerous. But the amateur ferreter is likely to be greatly disappointed.

In the rice fields of the far east the natives build numerous piles of brush and rice straw and leave them for several days until many rats have taken shelter in them. A portable bamboo inclosure several feet in height is then set up around each pile in succession and the straw and brush are thrown out over the top while dogs and men kill the trapped rodents. Large numbers are killed in this way, and the plan with modifications may be utilized in America with satisfactory results. A wire netting of fine mesh may be used for the inclosure. The scheme is applicable at the removal of grain, straw, or hay stacks, as well as brush piles.

FUMIGATION.

Rats may be destroyed in their burrows in the fields, and, still more important, in levees and rice-field dikes, by the use of carbon bisulphid. A wad of cotton or other absorbent material is saturated with the liquid and pushed into the burrow, the opening being packed with soil to prevent escape of the gas. All animals in the burrow are asphyxiated. Fumigation about buildings is not so effective, as the gas cannot readily be confined.

RAT-PROOF CONSTRUCTION.

The best way of excluding rats from buildings, whether in the city or country, is by the use of cement in construction. As the advantages of this material are coming to be generally understood, its use is rapidly extending to all kinds of building. Dwellings, dairies, barns, stables, chicken houses, ice houses, bridges, dams, silos, tanks, citerns, root-cellars, hotbeds, sidewalks, and curbs are now often made wholly of concrete. In constructing dwelling houses the additional cost of making the foundations rat-proof is slight as compared with the advantages. The cellar walls should have concrete footings and the walls themselves be laid in cement mortar. The cellar floor should be of "medium" rather than "lean" concrete, and all water and drain pipes should be surrounded with concrete. Even an old cellar may be made rat-proof at comparatively small expense. Rat holes may be permanently closed by a mixture of cement, sand, and broken glass or sharp bits of stone.

Rat-proof granaries, corn cribs, and poultry houses may be constructed by a liberal use of concrete in the foundations and floors.

Rats, mice, and sparrows may be excluded from corncribs by the use of either an inner or an outer covering of fine mesh wire netting sufficiently heavy to resist the teeth of rats.

The common custom of setting corncribs upon posts with inverted pans at the top often fails because the posts are not long enough to insure that the lower cracks of the structure are beyond jumping reach of rats. The posts should project at least three feet above the surface of the ground.

NATURAL ENEMIES OF RATS.

The value of carnivorous mammals and the larger birds of prey in destroying rats should be more fully recognized, especially by the farmer and the game preserver. Chief among the animals that are useful in destroying these rodents are the fox, skunk, and weasel, and the larger species of owls and hawks. Rats destroy more poultry and game, both eggs and young chicks, than all the birds and wild mammals named combined, yet some of our most useful birds of prey and carnivorous mammals are persecuted almost to the point of extinction. An enlightened public sentiment should cause the repeal of all bounties on these animals and afford protection to the majority of them.

CONCLUSIONS.

By the persistent use of traps, occasional resort to poison, and the exercise of forethought in the construction of farm buildings so as to minimize the opportunities for harborage, farmers and others may prevent the greater part of the loss and annoyance they now experience from rat depredations. The same statement applies in great measure to city and village conditions. Hence co-operation in the warfare on rats is particularly important and cannot be too strongly urged.

THE VALUE OF THE AGRICULTURAL NEWSPAPER TO THE SWINE BREEDER.

Henry Wallace, Before the Iowa Duroc Breeders' Meeting.

This topic is not of my own choosing, and I am not sure that I know what was in the minds of the gentlemen who selected it. A paper on this topic could have been more properly prepared by one of the swine breeders, who naturally would be the best judge of the value to him of the agricultural paper. To ask the editor of an agricultural paper to talk of the vaule of his or any other publication to the swine breeders puts him in the position of sounding his own praises, blowing his own horn, which the natural modesty of the average agricultural editor forbids. He is not accustomed to taking one of the pages of his paper to tell its readers how good it is; but permits his light to shine, satisfied that those who see the rays will not need any advertisement of the fact.

Not knowing exactly what was in the mind of the person who suggested the topic, I avail myself of the opportunity to state the position of the up-to-date agricultural paper in relation not merely to the swine breeding industry but to the live stock industry in general.

You are probably well aware that if the agricultural newspaper were to consider its own profit and loss account for the current year it would change the entire conduct of the paper. It would aim to secure as large a circulation as possible, publish such reading matter as would interest the greatest possible number of farmers, and then sell advertising space only to general advertisers, who are willing to give considerable more for the space than the live stock breeders can afford to give or should be asked to give. This advertising can be secured at about onthird of the expense of live stock advertising. For live stock advertising necessitates the employment of experts, who can become experts only after a thorough training and years of experience. When expert they command among the highest salaries connected with the business, and a higher salary than most other traveling salesmen. The live stock advertising solicitor is much more than a seller of advertising space. He must not only understand the different breeds of live stock, but he must be well posted on pedigrees. He must be a judge of the individual and the breeding. He must have a thorough knowledge of human nature; must be a pleasant fellow in the home. He must be able to talk offhand of the lovliness of the daughter, the promise of the son, and the charms of the younger children. He must be able to point out the superior qualities of the head of the herd and of the matrons; and must be able to mention them all by name when he meets the men to whom he wishes to sell advertising space.

The large expense connected with securing live stock advertising is due not merely to the expense of employing solicitors, but involves large expense in the way of traveling. Securing the contract requires one trip; the writing up of the herd just prior to the sale requires a second trip; and where the sale is large enough to justify it still further expense is incurred in attending and reporting the sale.

Securing the advertisements of hog sales is more expensive than cattle or horse sales, for the reason that the amount involved is always less and hence involves a much larger proportionate cost. Furthermore, it is subject to cancellation at the appearance of disease even after a large portion of the expense has been incurred.

I wish to state this frankly, because I think there is a misapprehension on the part of many breeders, and especially swine breeders, on this point. If an agricultural paper was to make money-making its chief end and was looking for immediate returns, the largest revenues could be obtained by omitting advertisements of live stock altogether and confining the editorial matter to such of the common things of agriculture as would be appreciated by the largest number of subscribers. From this point of view—when a paper is conducted on this line—in order to get circulation it can afford to sell the paper at a nominal price; and, if the Postoffice Department premitted it, to give it away altogether.

If I am asked, therefore, how it comes that the editors of papers that deal largely in live stock advertising are so magnanimous and self-sacrificing as to forego immediate profits and incur such large expense, I will give the reason frankly: They realize that by devoting large space to live stock and to the illustrations which are necessary in teaching the principles of animal husbandry, they lay broad and deep the foundation of future success. The agricultural newspapers realize that the permanent prosperity of the country will never be secured by exclusive grain growing; that exclusive grain growing is simply soil robbing, and that the art of exclusive grain growing is the art of the soil robber, while successful stock growing involves a knowledge of the science of agriculture, maintaining the fertility of the land and increasing it as far as possible; thus making grain growing in so far as it is carried on much more profitable in the end.

In fact, no state and no country has ever been permanently prosperous or can be permanently prosperous unless live stock has a large place in its agriculture. Agricultural newspapers of the better class understand this and therefore, are willing to take live stock advertising at rates which furnish the minimum of profit when the expense is taken into account; because they know they are laying the foundation for the permanent prosperity of the country and the permanent success of their patrons. I think I have fairly stated the position of the agricultural papers which aim at permanent success. They realize that this permanent success can be secured only by the permanent prosperity of the country, and that this permanent prosperity can rest on no other foundation than that of the permanence of the fertility of the soil.

Speaking now particularly of swine breeding as distinct from the breeding of other classes of live stock, it is well to notice that the average swine breeder has before him this problem: To grow the maxium corn crop and best hog pastures at the minimum of expense; to feed this grass and grain grown on the farm in the form of the best balanced ration possible to swine bred to make the best possible use of this balanced ration. To grow these grains and grasses, to feed them in the proper proportions to the class of hogs that will make the best use of them, and sell these hogs at the minimum of expense and the maximum of profit, is the mission of almost every swine breeder, the only practical exception being those who buy their grain instead of growing it.

In the solution of this problem the agricultural paper can give more efficient help to the swine breeder than any other publication known to mortal man. The swine breeder, unfortunately, is often disposed to look upon the agricultural paper as simply an advertising medium, a means by which he can sell his stock to the best advantage. This is a very narrow view. For the breeder must grow his stock before he can sell it. He must secure the best strains if he expects to market his hogs to the best advantage. He must feed his crops in the form of properly balanced rations. He must grow his own feed if he is to secure it at the minimum of expense and at the same time maintain the fertility of his land, in order that he may grow more and greater crops.

Now the growing of the corn crop involves a good deal more than the preparation of the seed bed, the selection of the seed corn, the cultivation and harvesting of the crop. It involves a knowledge of the rotation of crops; a knowledge of the various forms of insect life injurious to the corn plant. It involves the whole question of breeding corn as well as of breeding live stock. If for no other reason than that of aiding him to grow corn the swine breeder who would succeed should secure the best agricultural paper or papers available, and study them with the greatest care. An agricultural paper which devotes much space to live stock matters is often of greater value to the swine grower in teaching him how to grow the grain and feed it than in helping him through its advertising pages to dispose of his surplus stock.

The agricultural paper can be of great help to the swine breeders in suggesting the best methods of balancing rations. Ordinarily swine breeders are well up on the question of balanced rations. Sometimes, in fact, they are much better posted on the subject than they would have us believe. I remember of visiting a herd one time which the owner assured me had been raised on corn and water. I knew he was lying to me at the time, but said nothing until I had an opportunity to examine his swill barrel. I found that it differed very much from the ordinary swill barrel in that there was no swilly smell about it. I found it contained an admirable mixture of wheat and oats and oil meal, and I know not what, but evidently a balanced ration that would make any well bred or ill bred pig's mouth water, and like the wine

Solomon tells about, evidently went down so smoothly as to "make even the lips of him that was asleep to speak."

None the less the up-to-date agricultural paper can be of value to even the most advanced swine breeders by calling their attention to the results of experiments conducted at various experiment stations at an expense which the farmer or breeder could not afford to undertake, giving the results of varied rations, whether grown on the farm or purchased in the market. Ordinarily the swine breeder must buy more or less concentrates, and the agricultural paper can give him valuable pointers as to the kind it is best for him to buy, if given the prices of grains and of these concentrates at the nearest railroad station.

The reports of state, interstate, international, and foreign shows, which can be found only in first-class agricultural and live stock papers, are of inestimable value to the swine breeder, and he can well afford to subscribe for these papers if for no other purpose than to read the show reports and reports of sales, and to study the picture with an eye trained by experience, to detect high quality in his favorite breed of stock.

The agricultural newspaper is of great value to the up-to-date swine breeder in disposing of his stock. If a man is going into the business of swine breeding he should go into it for blood and with a determination to succeed. As long as he has any stock to sell, even if he does not expect to sell beyond the limits of his own and adjoining counties, he should have a yearly card in his favorite agricultural paper. This is to apprise his fellow citizens far and near that he is in the business. Very often the farmer—who, after all, is the best customer of the swine breeder—can find quite as good stock and quite as well bred in the herd of some small breeder near home as he can in the herd of some larger breeder at a distance. The small breeder should therefore, put up his sign where it can be seen by the farmers of his own and adjoining states, and give them to understand that he is in the race and expects to stay in and achieve success.

When it comes to a public sale he should use discretion in placing his advertisement. The amount of money which can profitably be spent in advertising must be determined according to circumstances in each individual case. The man who has been in the business a long time and has established a reputation as a breeder of good hogs can afford to advertise more liberally than the young breeder. On the other hand, unless the latter advertises freely he will never estblish a reputation. The important thing is to have hogs of the right sort to sell. If you are sure you have these, do not hesitate to advertise freely. In selecting the papers to be used, keep always in mind that the object in advertising is to reach the men who are likely to buy hogs.

The swine breeders may receive very great help from the solicitors and agents of an agricultural paper in the way of recognizing the defects of his herd and individual animals. If he really wishes to know wherein his herd fails he should plainly so state to the solicitor and convince him that he is in earnest and not fishing for compliments. An honest advertising solicitor will frankly tell him what to him seem to be the defects of his herd, and suggest how they may be remedied.

He will sometimes say: "I came here to solicit your advertisement and incidently acquaint myself with the merits of your herd, but I do not believe that under the circumstances I can render you the services you might expect." It is a foolish breeder who will take offense at this. The wise one will think all the better of a solicitor who has the candor and courage to tell him the truth. In this way the agricultural paper through its solicitors can be immensely helpful, especially to the young breeder who has it in him to succeed in producing swine of the highest quality, but has not yet reached the goal.

While the agricultural newspapers can be of great advantage to the swine breeding interests, it can also do untold injury by praising a herd or strain far beyond its merits, and thus lulling the breeder into a false security, doing this for immediate profit to the paper and not to the industry. Again, it may do untold injury by booming one particular strain or breeder and speaking sligntingly or derogatorily of other strains or other breeders. The solicitor who will do this should be promptly dismissed. For the mission of the paper is not to build up any one individual but to build up the industry.

Agricultural newspapers sometimes do untold injury to the industry by encouraging booms, by permitting their solicitors to carry ficticious bids to sales, and by aiding breeders to unload stock at higher prices than their merits justify. Especially is the agricultural paper an enemy to the swine breeding industry if it encourages boom prices for any particular strain, however meritorious that strain may be. For boom prices for hogs of particular strains that have won favor in the eyes of judges of live stock are the sure percursor of disaster to the entire swine breeding industry. For all the good qualities of the swine are not in any one strain or breed. No man has a corner on porcine merits. We always fear for the welfare of any breed when a boom sets in; for we know as certainly as that the sun will rise that when speculators get hold of any particular breed, or any particular strain or family of that breed, that breed or strain or family will in a short time be in disfavor with the farmers who breed and feed the vast majority of the swine population of the country. When speculators come in, good stock goes out. No breed or strain or family or swine can stand unusual prosperity any better than the breeder himself.

I may perhaps have surprised you by some of my suggestions; but I am sure that you do not expect me to say anything but what seems to me to be the truth on this or any other question.

HOW TO IMPROVE PASTURES.

Wallaces' Farmer

Farmers seem to be satisfied with but small returns from their permanent pastures. They piously and meekly take what comes, doubtless feeling that because they have expended no labor upon them they are entitled to no great reward. They seem to imagine that the pasture is resting, and while it is resting it would hardly be right to make it work.

Pastures are just like farmers and other people. They rest best not by idleness or doing little, but by change of work; and if a field is resting by growing grass instead of grain, it should work just as hard as when growing grain, and will work quite as effectively if properly managed.

You ask how to manage it? First, no field ought to be turned out to rest without a good stand of grass. To ask a field to produce a large crop of grass without the tools to work with. How much we would sow depends altogether on the thickness or thinness of the stand.

The first thing to do is to cover it over this winter with a coat of manure put on with a spreader. Five or six loads per acre will be enough. That manure will grow on the ground and will double itself in the next year. We do not want the above statement to be taken in all its literality. There will be no more loads on top of the ground than there was before; but manure being vegetable matter and grass being vegetable matter, the increase in the grass roots from the added fertility will actually double the amount of vegetable matter applied in the manure.

Don't turn your cattle out on the average pasture as soon as they can see anything green. If you have a blue grass pasture that has been allowed to grow along in the fall and has been covered with snow you can turn on your cattle as soon as the grass begins to grow. They will take the old grass and the young together and be ready to shed off from two to four weeks earlier than cattle that are kept in a dry lot and fed on dry food. But if you have no old grass on the pasture, let the grass have a chance to furnish a full bite before you turn on your cattle. If you keep your pastures gnawed down from the time the first grass begins to show until June you must not expect very much pasture the rest of the year. Let your crop have time to grow before you harvest it with your cattle.

Next, don't overpasture. That is a besetting sin of farmers. In a visit to our old home we passed through a pasture that had been leased to a couple of sons of a pretty wise old farmer. Meeting us one day, he asked how the grass was on the pasture. We told him that considering the acreage, the number of cattle, and the condition of the grass, the steers would not be fit for market very soon. The old gentleman studied a little, and then replied: "If my b-oys s-see a s-stalk of t-timothy g-growing, t-think t-they must g-go to the b-bank and b-borrow a hundred d-dollars to g-get a car load of c-cattle to eat it!"

Give the pasture tools to work with in the shape of a full stand. Give it manure with which to feed the grass roots. Don't harvest it too soon, and don't pasture it too short during the dry summer season, and you will get about twice as much value from your pasture as the ordinary farmer does

WASTE ON THE FARM.

D. C. Hall.

How to prevent waste on the farm is the constant aim and endeavor of every conscientious farmer, who farms not merely because he is compelled to do so for a living but because he enjoys the work and seeks thereby to make himself a successful and self-respecting member of community. The broader phase of the topic might and would naturally include every subject for discussion on this program. The more limited view is the one undoubtedly intended, however, and the one I shall attempt to discuss.

Some of the every day wastes occurring on the average farm make a constant drain on its revenue which so often means the margin between success and failure. A few of these items of waste, then, I shall mention, often leaving the remedies to be inferred, sometimes hinting at possible remedies.

The first I wish to make is care of farm machinery. These machines which it becomes necessary for a farmer to purchase in order to carry on modern farming successfully are expensive and should be kept in working order for as long a time as possible. There are two ways in which this may be done. In the first place by careful housing when not in use, and again and more important by careful and thoughtful handling while in use. In the housing of machinery care should be taken that all the parts be put away together and in such a manner that they may be easily accessible at any time. If this is not possible then they should be put away in the fall with the idea of the order of removal for the spring work ever in mind. It often happens that enough time is wasted in getting ill arranged machinery out of a machine house to pay for their loss due to their laying out over winter. One often hears the remark about a machine, "Any one can run that; all you have to do is drive," and similiar statements. This is far from the truth. The very simplest machine must be used with an accompaniment of brains or the work will be poor and the machine will suffer. "Lost a burr, lost a bolt, broke this or that," is a common expression as the man returns from the field, a waste of half an hour, often due to a lack of proper attention before starting out. I have seen windmills go through the winter without oil and the owners wonder why there was so little wind. Much waste may be avoided through this one item of machinery alone with frequent applications of oil and constant application of brains.

There are two ways of wasting the grain used as feed (and I believe that all grain raised on the farm should be fed on that farm). One is by feeding it and the other is by not feeding it. There is now and then a farmer who wastes his feed given to horses, cattle or hogs by giving more than the animal requires for its best development. I know a man who started to feed his calves a certain amount of feed each day without any regard to the amount they required, with the result that what was left soon spoiled each successive feed until the calves would have none of it, and he was brought forcibly to the realization of the fact that he must study the needs of his stock more closely. So rarely does this occur, however, that it is like a green oasis in a sandy desert when compared with the great multitude of farmers who let their stock shift for themselves during the winter, losing the gains made while on summer pasture and that they should make in the winter. This, it seems to me, is the most foolish of all wastes and cannot be too strongly condemned.

In this connection let me say, in regard to overstocking the pastures, it will pay much better in the long run to cut down the amount of stock to suit the size and condition of the pasture than to attempt to carry a larger amount through the summer on little and through the winter on nothing.

I never could see how an old cow could chew her cud all winter with nothing to eat unless she had contracted the habit. Then don't waste the growing ability of your stock by saving the feed.

Stock of any kind should have as nearly as possible a balanced ration if we expect to get the full value from the feed and then not waste any. In other words, they should receive all the essential food properties in about the right proportion.

Grain is often wasted in handling also. Not long ago I saw a man haul about five bushel of oats from the granary to another building and drive away leaving a half bushel on the ground. For waste of this kind there is no excuse save pure carelessness, and such men think more of their ease than of their success, or more likely do not think at all.

Another great waste on the farm is with regard to buildings and fences. The farmer must be ever watchful to keep them in repair, for what can give a farm so forsaken an appearance as to see fences sagging, posts broken, and wires broken and down, while the buildings are unpainted and delapidated? This may be convenient for the neighbors whose stock runs loose on the highway, but means money out of the pocket of the fellow who feeds it. Keep the buildings and fences in repair. It takes but little time when a board first comes loose to put it back in place, but if neglected it soon gathers together others of its kind and before long the building will be beyond the need of repair.

One of the most valuable products of the farm is its manure, yet how often is this asset neglected or disregarded altogether. The waste of this item alone on some places would if judiciously utilized make of the dependant renters successful farmers and often independant land owners in a few years time. There is a partial and a total loss of the soil building properties of manure depending on the method used in handling it.

And in this connection I cannot do better than call your attention to the experiments conducted at the Ohio experiment station. The results of the experiments are briefly as follows: Manure hauled from the stalls and spread with a spreader at the rate of eight tons per acre gave an increased crop yield of $23.70, or a net value for the manure of $2.96 per ton. Where the manure was hauled out in the spring from the yard all conditions being the same, the net gain was but $2.15, or a loss of 81 cents per ton. Further estimates indicate that the manure if left through spring and summer and hauled after harvest would be worth not to exceed $1.50 per ton, or a loss of nearly half. These figures speak for themselves and no further comment seems necessary.

All these points and more will occur to the mind of the average farmer upon a casual glance at the subject, but the greater avenue of waste is that of time, the most valuable asset on any farm. Any man can see buildings decay, feed go to waste or machinery constantly depreciate unnecessarily, but it is so easy to let a little time slip by unaccounted for and unimproved that it becomes the greatest enemy of success on the farm. There is a prevalent idea among so many farmers with but a small amount of stock that as soon as the fall work is done and the grain all hauled to town that they are at liberty to hibernate for the winter months, only coming out of cold weather quarters occasionally to look around and see if everything is alive. If the average city business man should pursue such a course it would soon mean ruin and bankruptcy. Is it to be wondered at, then, that such farmers are compelled to move from farm to farm each succeeding year with less to move each spring save the debt? These winter months which are so often wasted should be devoted to at least two things: (1)—Careful attention should be given to all stock on the place to see that they have every possible advantage in the way of food, water and comfortable sleeping quarters, and if they must shift for themselves at any time during the year let them do it in the summer when feed is to be had for the picking. In other words, give your stock a square deal and it will make you some money.

And again the winter season is the time to get ready for the spring and summer work. "In time of peace prepare for war" is advice particularly pertinent to the farmer. All seed for spring planting should be carefully selected and cleaned, machines should be overhauled and repaired, feed for spring and summer use should be placed most conveniently for saving time in the busy season, and all the plans for the summer's work should be carefully worked out.

This leads me to speak of the lack of system on many farms as an aid to the waste of time. Work by a carefully arranged plan instead of leaving every phase of the work to be prepared for after it is time to do it.

Too much time is spent in town and this is double waste, since it adds to the expense and diminishes the revenue to be derived by the man who is always on the job.

The question of hired help must almost be considered under this head also, and is one which is constantly facing many farmers.

Now I am a hired man myself and shall speak with that idea always in mind. For the man who goes out to work on the farm for wages, willing to give his employer honest, intelligent service, I have the greatest respect. But the time server who makes it his boast that he will not work hard enough to hurt himself, or that he will do just what he is paid for doing and no more, or who entertains similar ideas and who constantly attempts to slight his work and do as little as possible for the most pay, that kind of a man is an expensive luxury to have on the farm even if he works for his board, for his own time is largely wasted and much of his employer's time is wasted in looking after his work.

May not the arrangement and management of the crops be such that the farmer will be able to handle them with the minimum of hired help? Especially if he has taken advantage of the winter months in getting ready for and planning his summer's work.

Other items of waste, such as wasted land along line hedges, wasted poultry possibilities, wasted fuel material, the waste through the farm kitchen, etc., might well be considered but I have already taken too much of your time.

It is not that the farmer does not recognize these avenues of waste, for he knows that they exist, and just a little extra effort and careful thoughtful attention is all that is required to check them or put a stop to them so far as is possible.

And now with a few pertinent proverbs for the producer I close:

Do it now.

An ounce of prevention is worth a ton of regret.

A place for everything and everything back to its place.

He that wasteth while he farms will want when he moves to town.

A calf in the pasture is worth two on the right of way.

The meek shall inherit the earth, but the wise farmer shall reap the products of its fertility.

The words of the wise are as jewels. Read your farm papers that you may become rich.

A nail in time saves nine and often more.

The soil is the basis for all wealth. Give back to it that you may receive more abundantly.

Consider the hired man: he chores not, neither does he sweat, yet the farmer with all his broad acres cannot afford a driving horse like his.

BENEFITS DERIVED FROM FARMERS' INSTITUTES.

Mrs. Martha F. Thornton, Ankney, Iowa, Before Polk County Farmers' Institute.

The question is frequently asked, what benefits do we receive from the farmers' institute? In a farm paper of recent date I was reading that "Wherever a farmers' institute is held that has well trained speakers, finely equipped, expert, enthusiastic lecturers, agreeable and capable managers, comfortable suroundings, and a live, wide-awake up-to-date program, there will be expected in that community an interest, intelluctual and practical that will not die out with the close of the institute session." If the best results are to be obtained, all old shop worn goods must be gotten rid of regardless of cost. Nothing except clean, fresh up-to-date material can be permitted in the modern institute. Every institute ought to be a show window that will be remembered, an exhibition never to be forgotten by the community that beheld it, and impression ought to be made that will never be obliterated or cease to influence for good those who have received them. Those having control of the institute will make it their chief concern to see that there is presented to the audience something new and useful to think about and that it is served up in an agreeable and interesting way. It is a conceeded fact that the men of the community have become much interested and the results are they have improved their talents in acquiring more information, and to deny our farmers raise better grain and more of it, they have better and higher grade stock. Almost any farmer is willing to tell the methods he has used that has brought the best results and by this exchange of thought and practical demonstration the good ideas are passed along and even the spirit of friendship has well been cultivated.

But how is it with the women? These institutes have caused a radical change from some cause. The first institute that was held in Ankney, seven years ago last March, was attended in the morning session by about twelve men and two women, and the women were ex-Mayor Allen's wife and myself. Today it takes the greater part of this hall to give room for the women. We are glad they have become interested, many of them are on the anxious seat, really desirous of obtaining new knowledge in this field of work.

B. L. Hathaway, says in Rural Home, "The constant study of other methods and the careful observation and thinking necessary to adapt varying ends to one's own condition will do more to broaden the mind and develop the thinking qualities in the good farmer and his wife than any other agency under heaven."

We are glad that so many of our women have abandoned old methods that new labor saving machines (but not as many as should be) have been installed in the homes, saving both time and strength, and we all realize that time is money to the women, the same as it is to the man.

Life is too short to make many mistakes, and as we travel this road but once, we can not go back and make repairs. The idea held good a half century ago that we did not need anything for recreation, that a change of work was as good as a rest, but we are glad that idea has been exploded, and every woman in attendance at this institute will go home with some new thought to help her over some of the hard places, and will work with such willing hands, that she will never know that she lost a day's work she will be so full of new ideas, new thoughts and suggestions that the work will slip through her hands almost unheeded. You interest a child in a new story and it seemingly forgets it is tired or sleepy. We are only grown up children, and like them want to be entertained.

F. Hopkinson Smith, says: "We should never forget, that the one and only one thing that makes us all better than a machine is our imagination."

Grandma Beaumont, when she celebrated her one hundreth anniversary at the old peoples' home, was asked the secret of her long and happy life, answered, "Don't worry, keep busy and think of other people rather than yourself." How many of us come here today to impart something to this institute, that would do good to many, or have we come only to absorb. Have we not learned by coming to the institute year after year that there are those that have been trying to improve their talents. Some may have greater talents than others, but if I improve my two talents, my rewards will be as great as yours with ten talents. And we are all responsible for what we do not do, as for what we do do. Let every one here add their mite to help make this intsitute a success. We know that a prize at the end of the race is a great incentive to work. I would suggest that we have a membership roll for the women and have an annual membership fee and all competitors for prizes to be paid up members, and in this way we will have what money we need and not be under the necessity of some one going around to solicit friends. We like to be a little independent.

Ella Wheeler Wilcox wrote a little poem on leaning and lifting my sisters. Which are you, a leaner or lifter? Let us encourage every one who is willing to make an effort to either improve themselves or help lift up some one else and not be contented with ourselves until we have done all we can. I do not recommend this way for our institute alone, but in our church work, our homes, our schools or wherever anything can be made better, so that it will bear the test of criticism, but let the critic use kindness, not doing anything that would wound. We may get valuable suggestions and helps from others, yet it is your mind, your brains, your efforts, the right application of your knowledge, that will bring you true success. And with intelligent co-operation with the many that are advancing new and profitable ideas we may in a measure be assured of a reward. This institute work is a great and good work and far reaching in its influence. It has been said that the sliding along the line of least resistance will end up in oblivion. Are we going to look for the easiest places to fill or shall we take hold of any and everything that is in reason that comes our way and stay by it until success perches on our banner. Let us work with all earnestness to improve our surroundings, help build up our homes, our schools, our churches, in fact, our community and leave a good imprint on our future institutes.

With the ample amount of material at command and a systematic arrangement of subjects for discussion a two or three days' institute can be held both with pleasure and profit.

"LIFT WHERE YOU STAND."

Mrs. A. P. Ines, Algona, Iowa, Before Kossuth County Farmers' Institute.

Lord Macauley has said, "A people that takes no pride in the noble achievements of their ancestors will never achieve anything worthy to be remembered by remote generations." A record of bare facts by themselves does not constitute history. Such a record may be of value, but to attain the dignity of history we must have social events and evolution detailed with considerable fullness, and the growth of society from one phase to another, distinctly traced and recorded. We only know that this is a progressive age by comparing it with the past. And to whom can we give the credit for the up-to-date condition of things? Surely not to the younger generation of which the young man is a member. He may yet place his shoulder to the wheel of progress and a half century hence he, too, may be able to boast that he had helped to move the world along. History teaches everything, even the great future. To study it is to familiarize ourselves with the whole realm of art, philosophy, science and biography. Never before have events moved more rapidly than they are moving today. We are making history as rapidly as ever before. In the field of agriculture as great changes are taking place as elsewhere. Yet with all these advantages and privileges there is still room for improvement. The day has gone by when farmers will be satisfied with mere hard work. The day is gone by when a farmer's boy or girl ought to be expected to live in surroundings as devoid of comforts as many of their parents lived in. No, if the farmer's boy or girl stays on the farm, if they enjoy life there, it will be because their surroundings are such as make life enjoyable.

Few indeed are the influences that are stronger than the influences of home. So it is the duty of every farmer to make those influences good, to place his children in such an environment that they shall go out fitted for hard and faithful work in whatever they may undertake, so that they may look back upon their home as a place of pleasant associations and surroundings, a place which is truly an incentive for good. The present need then for many farmers is along the line of those things which add to the beauty and attractiveness of the farm home. Many are realizing this and are acting accordingly, but more should be done. We are fairly well supplied with labor-saving machinery, good buildings and other practical devices, yet we must not forget that other side of our nature which demands attention and without the development of which we cannot become well rounded and broad-minded men and women.

The longest rainy day and evening vanishes if the table is covered with papers, magazines and good books. One may go into many farm homes and find the Chicago or Des Moines daily, stock and farm papers and also religious papers. All these are good. Every boy and girl should be encouraged to read the newspapers. There are many who object to this and give good reasons, but much of the news of today will be the history of tomorrow, social, financial and legislative. There is certainly much in our daily papers neither elevating nor instructive; in fact, very objectionable, but with proper training the child soon knows the good from the bad, the true from the false and early in years learns to follow the great moves of the world and loses all interest in the petty worthless affairs that have little or no impression upon the canvas of life.

In addition to this, magazines that review and discuss the questions that are stirring the minds of the people should be found in every home. In these days of clubbing rates a few dollars go a long way in supplying a number of the best magazines of the day. There are very few farmers who are not able to add each year a few new volumes to their library; by doing this an atmosphere is given a home that it can attain in no other way and will serve as a magnet to keep and hold the rising generation to the farms and no matter where their lots may be cast they will not be strangers in a strange land, for their reading has kept them in touch with all people and all lands.

When studying the life of a nation, race or clan how anxious we are to know something of the homes of the people in whom we are interested. There is no surer index to the intelligence, culture and tastes of a people than the homes they maintain and from which they send representatives. Every advancement of the human race has been marked by the bettering of its habitation, in our own land from the wigwam of the red man to the palatial homes of the twentieth century. Sixty years ago log cabins dotted our prairies of the west. Today houses with conveniences undreamed of by our ancestors are found on many farms. There is nothing that adds to or detracts more from the life of the farmer and his family than the home and all the environments and influences that go to make that home.

The poet has sung of the meadows, brooks, hills and trees and in his imagination he smells the fragrance of the new mown hay and the fresh perfume of wild flowers and sees the glistening of the jeweled dew in the grass, and so on. But we who have spent our lives on the farm know that this is the poetry of farm life and that most of it is prose. Yet there is no life that so nearly reaches an ideal one as that of a farmer. No vocation has as great an unfolding, enlarging, cultivating, educative, elevating process as its results. Then why shouldn't the home and its surroundings be an ideal one.

Outside of the immediate home no feature of country life helps or hinders the making of an ideal home as the school, where the most vigorous hours of the child's days are spent. The farmer has the entire responsibility of the making of this school. The welfare of our country school is said to effect more homes directly or indirectly than the educational system of the towns and cities. Were the farmers' school tax three times what it is now he couldn't put his money where he would realize one-third as much from the investment as when used for the bettering of his school.

There is growing interest in the improvement of the rural schools, but owing to the conservativeness of the farmer himself improvement has been slow. When we know that in many states eighty-five per cent of the children of the country schools never pass beyond the boundaries of the school district so far as school training is concerned it is time to ask are these children getting the best there is to be obtained along the lines of instruction and training? The character of the home life on the farms of future generations dpends upon this instruction and training. With the uniform course of study now used there is no reason why a good business education with the realities of a larger life should not be given every boy and girl. To accomplish this, adequate compensation must be given to justify teachers to qualify themselves not simply to meet the requirements of the superintendent, but to acquire breadth and depth in training that will make that teacher an inspiration to the farmer's children to aspire towards the best things of life, to that which will develop them into citizens who will stand for what is noble, good and true, who will have a wider outlook and who will be in sympathy with all that is best and richest in country life.

It has been a hard matter to arouse the average farmer to the importance of requiring a thorough preparation of those who desire to be teachers in our country schools, but in no other way can our rural schools be made what they should be. The consolidated school plan may be the future solution of this question, but the present must be dealt with in some other way. In a recent conversation with one who has had a lifelong experience in furthering the education of boys and girls from city and country schools he declared the pupils whose fundamental training had been received at the home on the farm was well adapted to concentrate and hold the wind to his task, be it long or short, interesting or tiresome to him. This may be accounted for by knowing that every child at an early age is given his work. Usually made responsible for the life and well being of some plant or animal, from this beginning they soon feel the responsibility of several plants and animals resting upon them, and so on until they learn to devote all the energy they possess upon any charge given them, caring for animals or plant life, translating a sentence in Latin or solving a problem in geometry and finally as men and women meeting successfully all requirements of the world, be it in the line of finance, state affairs or leading armies to victory.

When that patient, persistent Scotch tenant farmer, Amos Cruickshank, began his work of creating modern and more practical type of cattle, up amid the bleak hillsides of his native country, he lifted higher where he stood than his fellow breeders. Close application, intelligent methods and persistence of purpose evolved at the end of twenty years a breed of cattle recognized the world over. When the late M. W. Dunham, as a young farmer, saw the first Percheron horse brought into Illinois he became impressed with the possibilities and the immense value to the farming interests of improving the horses of the United States. This led to the establishment of a princely estate which stands as a beacon light in American agriculture. When that veteran Clydesdale breeder, Colonel Holloway, bought the first Clydesdale he already had in mind the type of draft horses which was later to command the admiration and approval of two continents.

When James Reid, then an obscure farmer, conceived the possibility of creating a more profitable and pure bred type of seed corn he lifted where he stood in the improvement of this great staple crop of the Mississippi valley.

There are many new problems before the young farmer today. The work calls for the highest talent and the best training available.

The officers of our county fair believe thoroughly in lifting where they stand. See the decided improvement on our picturesque fair grounds. These grounds are the most beautiful and complete of any in the State and additions constantly are being made that add to their beauty and convenience. The new barns are the pride of the cattle and horse men. Floral hall, the finest in northern Iowa. The ladies' rest cottage a blessing of which any fair can well be proud. What a blessing this fair has been to the farmers. It has been the high school, the college or the university for many of us. All the year we have been living in the narrow circle of our own small community and have been traveling in the same old rut. But the announcement of the county fair arouses us from our bed of contentment, and we go forth to see better animals than we have seen in many a day, to examine the fruits of the fields and the latest improvement in farm machinery, and best of all, to just mingle with the crowd, where we shake hands with old acquaintances and form new friendships. And we go home with new inspirations and aspirations, feeling better and bigger and broader, learning lessons which we can carry home and put into practice on the farm.

The ubiquitous fakir was much in evidence, but a decided change for the better is noticed in the character of the side shows. The best part of most of them, however, can be seen on the outside of the canvas, which is evident they are not as clean and unobjectionable as they might be. How many sandwiches and ice cream cornucopias were consumed during the week we have not been able to ascertain. You might think that the Kossuth county diet consisted of sandwiches and ice cream unless you tried the church ladies' spread, which was quite like home. The live stock, perhaps, attracted more working farmers than any other feature of the fair. This year it was well up to the previous offerings in quality and numbers. Draft horses made a fine showing; light horses and ponies also were well represented. Sheep, hogs, fat cattle, dairy breeds and poultry had high scoring animals in every class, and taken together made an educational influence which cannot be measured. The seed corn show was very complete, even the boys taking an active part. You who viewed the tables groaning under the weight of luscious fruit told that the old saying is true that "horticulture is the refinement of agriculture and a willing guide for its regeneration." Paintings and flowers, fancy articles, domestic department, educational and pantry stores all shared alike the admiration of the visitors, showing there is one kind of education that is rapidly growing in popularity, namely, the useful education. After leaving the fair grounds last September we felt there was on thing lacking. No lecture or classes had been conducted pointing to the visitors the points of difference and advantages of each type shown.

Now we are proud of our splendid college of agriculture and we are glad of the short course that is fitting our men and women for better work. But we find so few farmers or their wives are able or so disposed to attend the short course held at Ames college every year. Would it not be practicable to conduct a short course in all departments at our county fair, calling it the local agricultural school. A corn judging department conducted by an expert from our state college at Ames. A live stock judging course will also be included and for this purpose some of the very best herds from our own county and adjoining counties can be used for instruction purposes. There ought also to be included in this short course a course in domestic science under the supervision of some instructor from the agricultural college. I believe that a few hours daily during the four days of our county fair would be the beginning of a new era for the farm woman and one that is worth the best efforts of every woman interested in the uplift of home life in our midst. If the education of right living teaches better and easier ways of doing things, if it helps to economize our household expenses and to secure better results for our labor, if it saves time and strength and means better health and brighter intellects and a more wholesome family life then it is surely worth trying for. When this short course is an established fact at our county fair such side show as "Nova, She Eats Mud," and the "French Theater" will be a thing of the past, and the young men and women will feel that a better and larger life is coming their way. In the doing and accomplishment of this the home life on the farm will be such an attractive one that the question of how to educate our young men and women to stay on the farm will be settled and settled right.

THE DIGNITY OF LABOR.

Mrs. Thos. Kain, Algona, Iowa, Before Kossuth County Farmers' Institute.

We live in a day when the poet and the philosopher have combined to sound the praise and dignity of labor. Idleness is no longer deemed honorable; work is the new patent of nobility.

We live in an age of industry. In an age that demands the union of brain and muscle to supply the call for men of mechanical and constructive ability.

The present tendency of nearly all school life is to fit the boy for a professional career; we shrink from the rough edges of life, those things that temper the will and purify the soul.

For the average boy who becomes an average man great advantages are now open to him. If we make the most of the period in which we live we should absorb and apply the spirit of that age. We are in an age of practical doings and expect practical results.

Though most of you have performed manual labor, which ran something like this, trying to raise more corn to feed more hogs, to buy more land and this same routine year after year, few of us have had the advantage of manual training, that developing of the combined efforts of brain and hands. Manual training departments are being started in all parts of the country, some of them on a very limited scale, but conveying the right principle, and this would not be so were it not for the unsupplied demand for the trained brain and hands. The child interested in manual training has a definite standard; that standard is his ideal. The man interested in dairying has his standard, be it Jersey, Guernsey, Alderney or Holstein.

Train for practical work, but train for ideals as well. This training gives us a people not only more practical for domestic life and better skilled in trades, but also gives us citizens of an entirely different intellectual fibre. It also cultivates a habit of observation, a knowledge of the difference between accuracy and inaccuracy.

We have big respect for the vigorous one in work. Energy is essential to an active life. American manufacturers claim they cannot secure American skilled workmen to meet the development of American opportunities, and many of their competent workmen are foreigners, skillful in their work, but ignorant of our language and customs.

While the professions are overcrowded the mining, the chemical and the constructive fields are unsupplied with skilled labor, though the salaries exceed many of the professions.

Education is no longer just one narrow thing. True education develops our usefulness, trains our mind to find the truth, trains our hands to do the work.

Why do we call Lincoln an educated man? Is it because he struck the shackles from 4,000,000 slaves? No. Because his heart was right to feel; his brain was clear to think; his hand was powerful and skillful to do. How came he to be educated? By being directed by a loving and righteous stepmother to love the right and the good; by striving at all times to know the truth in every situation; by working industriously to be of the highest service to his fellow men. It was in the school of labor which he dignified that he was educated; it was not in the school of learning.

No honest work is degrading; the only disgrace comes from the manner in which it is performed. The works of the head, the hand and the heart all are alike necessary, all are alike honorable.

There is no more dignified or wholesome way of earning a living than by forming a partnership with the forces of nature.

"There are millions of positions in the busy world today,
Each a drudge to him who holds it, but to him who doesn't, play;
Each believes that his real calling is along some other line
Than the one at which he's working—take, for instance, your's and mine.
Many a farmer's broken hearted that in youth he missed his call,
While that same unhappy farmer may be the envy of us all."

If you want to dignify any calling put the stamp of public opinion upon it. You put the stamp of approval upon a farmer's vocation when you put the science of agriculture in our schools. You may think that science does not apply to the practical farmer, that there is nothing of value in book farming. But science is simply the truth—the facts and the principles discolsed by the most complete experience of practical men. The useful man is he who contributes to the general welfare.

An eminent writer makes one of his characters give it as his opinion, "that whoever could make two ears of corn, or two blades of grass to grow on a spot of ground where only one grew before would deserve better of mankind and do more essential service to his country, than the whole race of politicians put together." Dean Swift's imaginary character was very must disposed to find fault with politicians, but he was evidently sound on the relation of corn and grass to human happiness.

We tend to strive for learning beyond our surroundings, we are not satisfied with small development we want big results. We may make drudgery of our work, or we may combine the intellect with the working of the hand.

How many of us as we watch the growing of a plant from a tiny seed to its maturity can tell the conditions necessary for its development, though plant life is our daily companion.

We may demonstrate a problem but can we tell how the soil can be better tilled in order to conserve its fertility. Henry Wallace says the farmer of this century is a land robber. If we do not educate our farmers our fertile fields will become, not in our day, but come it will, as barren as the farms of New England.

There must be a permanent agriculture to support a prosperous community. Land should not only maintain its productiveness it should increase its productiveness, and the knowledge of how to secure this may come to us through our Agricultural institutions and in this instructive world of nature, our daily associate, we may be able to see more than only trees, only clods in fields, only labor for which we expect a recompense. For through those schools the student not only receives a knowledge of the laws of nature but also a practical knowledge of the application of science in relation to life thereby fitting himself to be useful to mankind.

The present and the future, demand men prepared to solve the greatest of problems, the problems which concern the living natural features of our time. Tillers of the soil have too low an estimate of the standard of their work, they lack a manly pride, they are not proud of being agriculturists the oldest of occupations imbedded in the very structure of the earth.

For a time we have favored the people who work chiefly with the brain, the lawyer is an interpreter of some laws that men behind him have made. A banker is an interpreter of financial laws that men behind him have made, a farmer is an interpreter of the laws of nature a force before which all men bow in subgujation. 'Tis true his work may not be what we consider clean, but all matter is clean when in its proper sphere, and the soiled clothes and marked hands have always been and always will be, the genuine badges of creative toil.

We are told that farmers are today our leisure class, not our idle class, but our liesure class. The awful competition, the swift pace at which the professional man and the business man lives is out of the range of the farmer, for he can still control his time to a certain extent. But our development is incomplete if we ignore our hours of leisure and demand activity of muscle as the highest of ideals, leisure is beneficial to all when used wisely, it broadens our ideas, it quickens our thoughts, it brings us in contact with new principles and with many classes who in various ways are working for the benefit of humanity.

"A certain merchant placed a blackboard in his store, and asked his customers to write their names upon it, and after the name to write what they were doing for humanity. First came a lawyer and he wrote, "I plead for all." Next came a doctor who wrote, "I prescribe for all." The third was a minister and he said, "I pray for all." Then came a farmer who after writing his name, thought awhile, then put down, "I pay for all."

Well, that may be the farmer's especial gift, and he is given plenty of chance to cultivate it, still we call the farmers the independent class, but after all no class is wholly independent.

Do not hold up before young eyes the almighty dollar as a scale by which to measure the length and breadth of labor but rather, teach the results of conscientious thought and toil, will daily gain in force and influence, while the minted coin diminishes in value by constant circulation.

Life presents varied demands. You cannot make the best kind of a citizen out of a man who thinks his calling the only one worthy of consideration, so there is need of studies dealing with topics of general interest. When we add to the knowledge of *these*, training in some especial line, we may feel well equipped for some position. Educate for the fulfilling of some vocation, not for the getting of vacations.

The world of mechanics is asking for the vigorous educated man who is capable of performing brainy labor. We are in a period of construction work, greater than that performed by the ancient Romans. As a nation we are building, building as no nation ever built before.

The most remarkable railroad in the world is in operation for 81 miles, and most of the construction work is done which will unite Florida and Key West by rail. Cars run on a track 31 feet above high water, and passengers may sit in the windows of Pullman coaches in all serenity, and have an opportunity to seeing how the Atlantic ocean looks in a gale. Experts who have studied this work consider it the most ingenious piece of engineering of modern times. It is being built under the supervision of J. C. Meredith, an Iowa man educated at the Agricultural College at Ames. In many respects this work is considered more difficult than the Panama Canal. It was not only necessary to bring all the workmen from distant sources of supply but they must be lodged and fed in enormous floating dormitories, which were anchored from place to place as the work progressed. The owner of this road sees a vision of the future. He sees the commercial growth which is following the independence of Cuba, that with transportation her products may be distributed over the United States and her natural resources is atracting millions of capital. Beyond is dawning a vast industrial opening of South America and Mexico. Our own Northwest has scarcely started to grow in a practical way. To meet this progression various methods for the better industrial education of the youth of our country are being discussed by educators. All agree on the necessity for better mechanical training but they differ widely on the methods.

Brain training is well, but that is only a part of a balanced education. When we consider that we have two channels of expression, one being the tongue and the other the hand, we may believe the statement that we have undertrained the hand and overtrained the tongue. Ability to work out ideas that can be expressed by objects made by the hand gives the world the men and women who have done most to beautify our lives.

Men in every age of the world have scorned the idler and if we judge by the fruits of idleness, no honor comes to him who shirks his duty. What stores of wisdom, what breadth of knowledge, labor brings. Learning is not an instinct, and we shall never get beyond the need of having more and more, for knowledge is boundless in extent, and may be a power when properly organized and under control; but he who *excels* must *work* for it, and by his labor he becomes dignified.

A single practical life has more than once changed the aspect of the whole civilized world. A poor drudging mechanic has by his invention of a machine, or by the application of a force, more than once doubled the energy and wealth of mankind.

Steam was as mighty in the days of Solomon as it was when brought under the control of man and yoked to an engine to do the world's work. Electricity played through the heavens since the dawn of the world waiting for some practical mind to harness it. Our field of labor is widening. Now industries are constantly being organized, educated labor is demanding its proper place—and in many ways pays handsomely—in money—in strength in life in the open—in constructiveness—in invention.

No real successes are won without patience and labor. It is lesson after lesson with the scholar, it is venture after venture with the merchant, it is trial after trial with the inventor, it is failure after failure with him, who still persevering wins the goal for which he strives.

The world honors honest labor, but despises the idler.

WHAT THE INVESTIGATOR HAS FOUND OUT.

From Illinois Farmers' Bulletin No. 10.

YEARS OF TESTS THAT HAVE SOLVED PRACTICAL PROBLEMS OF THE FARM.

Testing Each Ear of Seed Corn.—The value of applying the germination test to each individual ear of seed corn was well demonstrated in the testing of ten lots of from 43 to 414 ears. The average results were as follows: The composite test of all ears showed 84.6 per cent of germination. When the poor ears, as indicated by the test, were discarded, the germination of the good ears averaged 93.7 per cent, while the discarded ears averaged only 60.4 per cent. The rejection of those poor ears, made possible only through a separate test of each ear, made a notable improvement in the seed corn and in the stand of the plants grown from that seed.

Best Planting Time is May 4 to May 25.—The best time for planting corn has been carefully tested for eight years, with the following average yields per acre from the plantings at the dates named: Corn pllanted April 22 to 26 yielded 48 bushels per acre; April 27 to May 4, 60 bushels; May 4 to 11, 62 bushels; May 11 to 18, 62 bushels; May 19 to 25, 61 bushels; May 26 to June 1, 56 bushels. Succeeding weeks yielded respectively 50, 39 and 21 bushels per acre. The results show that there was very little difference in the yield of corn planted during the three weeks from May 4 to May 25. The lesson is that it is not necessary to plant corn the first fair day. The farmer would better take plenty of time to prepare the seed bed thoroughly and get the ground mellow and finely pulverized.

Changing the Height of Ears Upon the Stalk.—It has been clearly proven that the height of ears upon the stalk of corn may be changed either upward or downward by breeding from respectively high or low ears. Five years' breeding from high ears resulted in producing ears of the following average heights: In 1903, 54.4 inches; 1904, 50.2 inches; 1905, 63.2 inches; 1906, 56.3 inches; 1907, 72.3 inches. Breeding in the opposite direction, that is, from low ears, produced five successive crops in which the ears averaged respectively 42.8 inches, 35 inches, 41.6 inches, 26.6 inches, 33.3 inches. Here is a difference the fifth year of 39 inches between the high ears and the low ears as the result of seed selection, and the average difference for the whole five years is more than 23 inches.

Shallow Cultivation Increases Yield Four Bushels.—In a five-year series of tests comparing shallow cultivation of corn with deep cultivation the results were an average yield of 70-3 bushels per acre for the former and 66.7 bushels per acre for the latter—an average increase of 3.6 bushels due to shallow cultivation.

Drilling Oats Increases the Yield Four Bushels per Acre.—In ten comparisons of sowing oats broadcast and drilling them in, there was a difference in yield of four bushels per acre in favor of drilling.

Large Seed Increases the Yield.—Results from the Ontario Experiment Farm were quoted to show the benefit of using seed of large size. Seven crops of oats showed an average yield of 62 bushels per acre from large seed and of 47 bushels per acre from small seed—a difference of 15 bushels per acre in favor of large seed. As the average of six years' work with winter wheat the large seed increased the yield from 40 to 47 bushels per acre. The same number of experiments with field peas resulted in an average increase of five bushels per acre due solely to large seed.

FINANCIAL STATEMENT OF COUNTY FARMERS' INSTITUTES IN IOWA.

FOR FISCAL YEAR, JUNE 30, 1906 TO JULY 1, 1907.

Number	COUNTIES	RECEIPTS			Disbursements									Number
							Premiums							
		State aid	Membership fees and other sources	Total	Speakers	Judges	Corn	Poultry	Miscellaneous	Printing, advertising and postage	Hall rent	Other expenses not itemized	Total	
1	Adams	$ 48.03		$ 48.03	$ 26.53					$ 2,00	$ 15.00	$ 4.50	$ 48.03	1
2	Benton	74.80		74.80	37.80					12.00	25.00		74.80	2
3	Black Hawk	75.00		75.00	44.00					19.00		12.00	75.00	3
4	Bremer	75.00	$ 30.55	105.55	42.90					9.75	28.00	24.90	105.55	4
5	Buchanan	75.00		75.00	20.00					23.00	25.00	7.00	75.00	5
6	Buena Vista	75.00	125.50	200.50		$ 60.00	$ 65.50				75.00		200.50	6
7	Butler	75.00	52.50	127.50	75.00		6.00		$ 5.00	1.50	40.00	10.00	127.50	7
8	Calhoun	75.00	5.55	80.55	23.97	13.00				16.02	17.40	10.16	80.55	8
9	Cedar	70.18		70.18	37.93					6.75		25.50	70.18	9
10	Cerro Gordo	75.00		75.00	44.00		7.00		24.00				75.00	10
11	Chickasaw	75.00		75.00	39.77					15.23	20.00		75.00	11
12	Clay	75.00	96.20	171.20	57.45					13.75	100.00		171.20	12
13	Clayton	37.90		37.90	22.40					3.50	12.00		37.90	13
14	Clarke	65.36		65.36	43.85					3.71		17.80	65.36	14
15	Clinton	75.00	11.66	86.66	42.66	2.50				6.00	12.00	23.50	86.66	15
16	Dallas	75.00	82.28	157.28	10.77	11.16	96.00		7.00	6.50	10.00	15.85	157.28	16
17	Decatur	67.30		67.30	36.90					24.25	4.00	2.15	67.30	17
18	Delaware	75.00	7.00	82.00	40.00					10.00		32.00	82.00	18
19	Dickinson	75.00	42.44	117.44	51.54					15.90	50.00		117.44	19
20	Dubuque	74.00		74.00	47.58					2.92	20.00	3.50	74.00	20
21	Emmet	75.00		75.00	53.64					6.36	15.00		75.00	21
22	Floyd	75.00	32.00	107.00	46.00		18.00			5.65	25.00	12.35	107.00	22
23	Franklin	75.00	40.47	115.47	69.90					15.00		30.57	115.47	23
24	Fremont	75.00	54.22	129.22	80.47				25.50	9.50		13.75	129.22	24
25	Greene	75.00	15.50	90.50		5.00		5.00		12.50	15.00	53.00	90.50	25
26	Guthrie	75.00	23.75	98.75	20.00				14.00	37.75	25.00	2.00	98.75	26
27	Hancock	75.00		75.00	70.25					4.75			75.00	27
82	Hardin	75.00	1.15	76.15	49.15					10.00	12.00	5.00	76.15	28
29	Harrison	52.30		52.30	28.70					3.20		20.40	52.30	29
30	Howard	73.50		73.50	60.00					5.00		8.50	73.50	30
31	Humboldt	75.00	60.00	135.00	50.00					15.00	45.00	25.00	135.00	31
32	Ida	75.00	3.80	78.80	53.00					19.50		6.30	78.80	32

FINANCIAL STATEMENT OF COUNTY FARMERS' INSTITUTES IN IOWA—CONTINUED.

Number	COUNTIES	Receipts			Disbursements									Number
							Premiums							
		State aid	Membership fees and other sources	Total	Speakers	Judges	Corn	Poultry	Miscellaneous	Printing, advertising and postage	Hall rent	Other expenses not itemized	Total	
33	Iowa	72.75		72.75	34.06					5.50	12.00	21.19	72.75	33
34	Jackson	75.00		75.00	44.04					3.00	15.00	12.96	75.00	34
35	Jasper	74.70		74.70	33.50					16.20	25.00		74.70	35
36	Jefferson	75.00	2.87	77.87	35.52					26.40	10.00	5.95	77.87	36
37	Johnson	75.00		75.00	33.35		23.38			7.50	7.00	3.77	75.00	37
38	Keokuk	75.00	38.87	113.87	42.48						10.00	61.39	113.87	38
39	Kossuth	56.75		56.75	29.75					5.00	7.50	14.50	56.75	39
40	Lee	75.00	5.17	80.17	43.57					9.90	15.00	11.70	80.17	40
41	Linn	75.00	21.63	96.63	24.93					18.90	20.00	32.80	96.63	41
42	Louisa	58.60		58.60	23.20					7.50	11.00	16.90	58.60	42
43	Lucas	39.90		39.90	30.75					3.80	5.00	.35	39.90	43
44	Lyon	75.00	221.05	296.05	83.25			18.35	7.00	112.25	35.00	40.20	296.05	44
45	Madison	69.25		69.25	31.00	8.00	23.00			1.50		5.75	69.25	45
46	Mahaska	75.00	818.10	893.10					535.00	308.10	50.00		93.10	46
47	Marion	75.00	1.65	76.65	7.10					60.00		9.55	76.65	47
48	Marshall	75.00	58.42	133.42	91.17					30.25	6.00	6.00	133.42	48
49	Mitchell	69.00		69.00	38.00		7.00			9.00	15.00		69.00	49
50	Monona	75.00	106.12	181.12	44.98	32.20			43.50	8.00	35.00	17.44	181.12	50
51	Monroe	75.00		75.00	10.00					50.00	15.00		75.00	51
52	Muscatine	47.30		47.30	3.75	5.00				12.05	9.50	17.00	47.30	52
53	O'Brien	75.00	43.27	118.27	72.27					5.00	41.00		118.27	53
54	Osceola	58.13		58.13	21.48					10.65		23.00	58.13	54
55	Page	75.00	8.00	83.00	70.50					7.50		5.00	83.00	55
56	Polk	75.00		75.00	41.30					2.70	26.00	5.00	75.00	56
57	Poweshiek	75.00	148.68	223.68		54.27			125.00	3.35	40.28	.78	223.68	57
58	Ringgold	75.00	83.43	158.43	114.93	19.50	6.00	11.00		7.00			158.43	58
59	Sac	75.00	1.71	76.71	33.50	19.13				15.55		8.53	76.71	59
60	Scott	74.50		74.50	46.00	5.00				3.50		20.00	74.50	60
61	Sioux	75.00	17.80	92.80	76.30					10.00		6.50	92.80	61
62	Shelby	75.00	4.81	79.81	30.00	13.21				10.00	16.45	10.15	79.81	62
63	Story	75.00	10.10	85.10	23.35				9.50	9.00	39.00	4.25	85.10	63
64	Tama	75.00		75.00	30.00					5.00	40.00		75.00	64
65	Taylor	75.00		75.00	58.00						17.00		75.00	65

66	Union	75.00	35.00	110.00	40.59	----------	3.00	----------	.50	22.28	20.00	23.63	110.00	66
67	Van Buren	75.00	.84	75.84	49.46	----------	10.00	----------	----------	8.38	5.00	3.00	75.84	67
68	Wapello	75.00	----------	75.00	67.75	----------	----------	----------	----------	7.25	----------	----------	75.00	68
69	Warren	75.00	44.01	119.01	42.36	----------	----------	----------	----------	76.65	----------	----------	119.01	69
70	Washington	75.00	82.44	157.44	73.84	----------	----------	----------	----------	39.00	----------	44.60	157.44	70
71	Wayne	75.00	----------	75.00	38.10	----------	----------	----------	----------	16.90	20.00	----------	75.00	71
72	Winnebago	75.00	19.00	94.00	67.00	----------	14.00	----------	3.00	10.00	----------	----------	94.00	72
73	Winneshiek	41.50	----------	41.50	13.75	----------	----------	----------	----------	6.50	15.00	6.25	41.50	73
74	Worth	75.00	.84	75.84	60.44	----------	10.00	----------	----------	1.05	----------	4.35	75.84	74
75	Wright	75.00	145.85	220.85	146.35	----------	----------	----------	----------	22.00	5.00	47.50	220.85	75
	Total 1906-07	$5,350.75	$2,604.23	$7,954.98	$3,230.83	$ 247,97	$ 288.88	$ 34.35	$ 799.50	$1,330.10	$1,178.13	$ 866.22	$7,954.98	
	Total 1905-06	$5,623.46	$2,377.22	$8,000.68	$3,410.12	$ 208.18	$ 271.50	$ 31.00	$ 918.50	$1,221.93	$1,180.63	$ 758.62	$8,000.68	

PART XI

FINANCIAL STATEMENT

AND

Report of Agricultural Conditions

BY

County and District Agricultural Societies In Iowa, 1907

ADAIR.

W. W. WEST, GREENFIELD, OCTOBER 26, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Average condition. Season backward.

OATS—Very poor crop. Much of this grain was not harvested but turned under for next year's corn crop. Quality poor.

WHEAT—Not much raised but quality very good.

RYE—Acreage above the average and quality good.

BARLEY—Same report as rye.

FLAX—None raised.

BUCKWHEAT—Small acreage; quality fair.

MILLET—Crop generally above the average.

SORGHUM—Small acreage; good quality.

TIMOTHY—Excellent crop. A great deal cut for seed with large returns.

CLOVER—First crop short. Second crop better and of good quality.

PRAIRIE HAY—None.

POTATOES—Fair crop of good quality.

VEGETABLES—Generally unfavorable conditions throughout spring and early summer made the vegetable crop below average.

APPLES—Crop generally short. A few varieties of fall and winter apples have yielded a fair crop.

OTHER FRUITS—An abundant crop of small fruits of all kinds. Peaches, pears, etc., almost a total failure.

CATTLE—About the average number on hand at this time of the year. All kinds of cattle command a good price, but good dairy cows with beef quality especially in demand.

HORSES—More than usual raised and of better quality. Heavy home demand for heavy draft mares and colts.

SWINE—Good prices and no disease have made the hog the big money maker the past year. Some disease in the county at this time, but seems to be confined to a few herds.

SHEEP—More sheep in the county than in any previous year. A large number of western ewes shipped in this fall and sold quickly in small bunches.

POULTRY—Increase in price of both eggs and poultry has brought about the breeding of much better stuff.

BEES—Not many raised or kept.

DRAINAGE—A great deal of tiling has been done the past year and our factory is filled with orders for winter delivery to the farmers.

LANDS—Considerable land has changed hands during the past three months at prices ranging from fifty to one hundred dollars per acre.

REPORT OF FAIR—Held at Greenfield, September 3 to 6. Good attendance and some old indebtedness paid. Good exhibits in nearly all departments. Swine exhibit largest ever made here. No gambling, side shows, etc., allowed on the ground.

ADAIR.

A. C. SAVAGE, ADAIR, OCTOBER 26, 1907.

GENERAL CONDITION OF CROPS AND SEASON—First of season backward and cold; later too dry. Small grain crop light; hay light; corn of fair quality and about eighty-five per cent crop. Has been an excellent fall for threshing and harvesting.

CORN—Generally good; about eighty-five per cent of crop. Some complaint of corn being light in weight.

OATS—Light and chaffy but price good.

WHEAT—Fair quality; yield light.

RYE—None raised.

BARLEY—Very little raised but fair quality.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Very little grown.

SORGHUM—None grown, except for fodder.

TIMOTHY—Hay generally quite light but yielded well; good price.

CLOVER—Light.

PRAIRIE HAY—None.

POTATOES—Yield light and potatoes rather small. Too dry at growing time.

APPLES—Crop almost a failure and of poor quality.

OTHER FRUITS—Not much fruit on account of late frosts in spring.

CATTLE—Not as many being fed as formerly. More cows being milked and conditions generally improving as to quality of stock.

HORSES—Good prices have prevailed for the year and quality improving.

SWINE—Conditions generally have been quite favorable for hogs; good prices the past year; very little sickness, though in the spring a number of pigs were lost on account of wet, cold weather.

SHEEP—Only few handled.

POULTRY—More poultry raised than for some years, with quality of stock improving and good prices.

DRAINAGE—Being improved and more tiling being done than formerly.

LANDS—Prices have advanced steadily.

REPORT OF FAIR—Held at Adair, October 2 to 5, 1907. First of week rainy and cold and fair held over one day more than planned. Larger number of exhibits than at any former fair. Excellent attendance. More interest taken than heretofore and there seems to be a disposition to put the fair on a more solid financial basis. A marked improvement shown in the quality of exhibits compared with previous exhibits.

ADAMS.

GEO. E. BLISS, CORNING, OCTOBER 1, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Season unfavorable except for oats; too much heat and moisture at a critical period.

CORN—Average yield about forty bushels.

OATS—Average yield about twenty-six bushels.

WHEAT—Spring wheat yielded about sixteen bushels, and winter wheat about twenty-four bushels per acre.

RYE—Spring rye yielded about nineteen bushels and winter rye twenty-two bushels per acre.

BARLEY—Yielded about thirty-three bushels per acre.

BUCKWHEAT—None raised.

MILLET—About two tons per acre.

SORGHUM—Promises well.

TIMOTHY—Averaged half a ton; too dry in April.

CLOVER—All clover killed by drought last year. Splendid stand this year's seeding. Very little clover hay this year.

OTHER GRAINS AND GRASSES—Speltz yielded forty bushels.

POTATOES—Good quality; fair yield.

VEGETABLES—Extra good parsnips, carrots, etc.

APPLES—About thirty per cent of crop. Janets will yield well.

OTHER FRUITS—Strawberry, raspberries, blackberries and gooseberries made an excellent yield.

CATTLE—Made good gain and growth this season, but calf crop is short.

HORSES—Demand exceeds the supply; nearly all shipped south.

Swine—About average number of pigs this spring but a great many died of scours.

Sheep—Very few in the country; too many dogs.

Poultry—Crop of chickens very good.

Bees—Not enough honey made to supply the demand; shipped from adjoining counties.

Drainage—Hundreds of acres of land are being drained with tile.

Lands—Selling from $55 to $150 an acre and quite a good deal changing hands.

Report of Fair—Held at Corning, August 19 to 22. Very good attendance, but county fairs are becoming a one day affair.

ALLAMAKEE.

A. C. Larson, Waukon, September 28, 1907.

General Condition of Crops and Season—Good.

Corn—Poor; half a crop.

Oats—Poor.

Wheat—Good.

Rye—Good.

Barley—Good.

Flax—Good.

Buckwheat—Good.

Millet—Good.

Sorghum—Good.

Timothy—Good.

Potatoes—Fair.

Vegetables—Good.

Apples—Extra good.

Other Fruits—Fair.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Fair.

Lands—Prices advancing.

Report of Fair—Held at Waukon, September 17-20. Rain on Wednesday cut down the gate receipts about $1,000.

AUDUBON.

O. B. Train, Audubon, September 23, 1907.

General Condition of Crops and Season—Season rather backward and dry; small grain started slow and was a light crop, although general conditions were satisfactory.

CORN—Corn was generally late, but fine weather the fore part of September has matured it in good shape; will average sixty bushels per acre; price fifty cents.

OATS—Averaged thirty bushels per acre; quality poor, affected by rust. Price forty-nine cents per bushel.

WHEAT—Not very much raised; yield about fifteen bushels per acre; quality fair; price eighty cents.

RYE—Very little raised.

BARLEY—Average yield thirty bushels; somewhat colored. Price seventy cents.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Small amount raised for hay.

SORGHUM—Average yield per acre seventy gallons; price fifty cents per gallon.

TIMOTHY—Light yield on account of dry spring; quality good; practically no seed.

CLOVER—Rather light yield; quality good, although some badly damaged by rain in harvesting; very little seed.

PRAIRIE HAY—Practically a thing of the past in this county.

POTATOES—Average yield forty bushels per acre; price one dollar per bushel; quality generally poor.

VEGETABLES—Fair crop of most vegetables, although too dry for some.

APPLES—Not over twenty-five per cent of crop; quality poor.

OTHER FRUITS—Strawberries about half a crop; raspberries, medium; blackberries good; cherries none; plums, very few; grapes, fair crop and good quality.

CATTLE—Principal breeds, Durham, Hereford, Holstein and Jersey. Average price of cows, thirty-five dollars per head. No diseases. Total number assessed, 29,125; value, $637,965.

HORSES—Principal breeds, Norman, Clydesdale, coach and grade. A good many western horses. Prices high. Number assessed, 10,507; value, $719,519.

SWINE—Principal breeds, Poland China, Duroc Jersey and Chester White. Great improvement; no disease; number assessed, 61,389; value, $463.561.

SHEEP—Cotswold, Southdown and Shropshire. Number assessed, 5,420; value, $22,416. Prices good.

POULTRY—Plymouth Rocks seem to predominate. Eggs eighteen cents. Ducks, geese and turkeys not very plentiful.

BEES—This industry has almost died out, presumably on account of dry seasons.

DRAINAGE—A great many tile are used, but the county being rolling there are no drainage ditches.

LANDS—Getting better from year to year by the use of tame grass, especially clover, and considering the price of material, the improvements made are wonderful. Land sells from seventy-five to one hundred and fifty dollars per acre, depending upon improvements and distance from town.

Report of Fair—The Twenty-eighth annualy fair was held at Audubon September 3 to 6. Weather generally favorable; largest attendance in the history of the fair on Thursday. Receipts larger than ever before and the fair was generally considered the best ever held in the county. Stock exhibits were fine and attracted much attention. Speed entries and races good. The old soldiers' reunion was held during the fair and a fine program given.

BENTON.

Arad Thompson, Vinton, October 21, 1907.

General Condition of Crops and Season—This has been a good year for the farmers. Some crops not up to the average, but taken as a whole, considered an average year.

Corn—Eighty per cent of an average crop.

Oats—Poor quality and light yield.

Wheat—Not enough raised to report.

Rye—Average.

Barley—Average.

Flax—None raised.

Buckwheat—Average.

Millet—Average.

Sorghum—Light crop.

Timothy—Good quality and good yield.

Clover—Average.

Prairie Hay—Very small number of acres left for prairie hay.

Potatoes—Short crop; fifty per cent.

Vegetables—Average.

Apples—Short crop.

Cattle—One hundred per cent; great year for cattle of all grades.

Horses—The best property a farmer has in the county today. Many have been marketed for good price.

Swine—An average year for swine.

Sheep—Improving in number and quality. The show at the county fair was pleasing to the patron.

Poultry—One of the best agricultural pursuits in the county. More than an average crop has been raised this year.

Bees—Few kept.

Drainage—Many farmers have improved their farms in this respect this year.

Lands—Steady advance in price the past year and land is now on an upward tendency.

Report of Fair—Held at Vinton September 24 to 27. Good weather except the last day. Good attendance and great interest shown. Show of stock not up to the average, but all in all a successful and profitable fair.

BLACK HAWK.

B. L. MANWELL, LAPORTE CITY, OCTOBER 10, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops were backward, owing to cold and rainy weather retarding plowing and cultivation.

CORN—About two-thirds of an average yield; quality poor.

OATS—One half crop and very light weight.

WHEAT—Very little raised.

RYE—Good crop but little raised.

BARLEY—An average crop of good color and quality.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Good average crop.

TIMOTHY—About two-thirds average crop.

CLOVER—Good crop but damaged by rain.

PRAIRIE HAY—Nothing but slough hay.

POTATOES—About half a crop.

VEGETABLES—Good.

APPLES—Good crop and free from worms.

OTHER FRUITS—Good crop.

CATTLE—Plentiful and a little lower in price than last year; not so many being fed as this time last year.

HORSES—Scarce and high priced.

SWINE—Average number raised and free from disease.

SHEEP—Very few raised in this county.

POULTRY—This industry is constantly increasing; more raised this year than ever before.

BEES—Have about regained the loss of 1905 and 1906.

DRAINAGE—A great deal of tile laid this year.

REPORT OF FAIR—Held at LaPorte City September 17 to 19. Weather threatening but no rain during the fair. The management made no mistake in increasing the admission fee from twenty-five to thirty-five cents. All departments were well filled; the racing good; the attractions pleasing to the people.

BOONE.

W. C. TRELOAR, OGDEN, OCTOBER 21, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Not a very good crop season; too much wind; not enough rain for the hay and potato crops.

CORN—Not as good as last year; yield from forty to fifty bushels per acre; quality not very good.

OATS—Light and of poor quality.

WHEAT—Good quality but very little raised.

RYE—Very little raised.

BARLEY—Very little raised.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—A good crop and of good quality.

SORGHUM—Small quantity but of good quality.

TIMOTHY—Light crop; about one half that of last year.

CLOVER—No clover cut for seed.

PRAIRIE HAY—About an average crop.

POTATOES—Yield short, although a good many are being shipped away.

VEGETABLES—Average crop and of good quality.

APPLES—Light crop.

OTHER FRUITS—About an average crop.

CATTLE—About the same amount as usual being raised; many being fed.

HORSES—More raised than for many years previous; some high class horses.

SWINE—Crop is not quite as large as last year.

SHEEP—Few raised, but of good quality.

POULTRY—A great deal of poultry raised.

BEES—Honey crop is good.

DRAINAGE—A great deal done in the county during the summer

OTHER INDUSTRIES—Coal mines just opened; good supply of coal of the very best quality.

LANDS—Land is selling from ninety to one hundred dollars per acre.

REPORT OF FAIR—Held at Ogden September 25 to 27. Week rainy; only one good day.

BOONE.

A. M. BURNSIDE, BOONE, OCTOBER 11, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The season was backward and crops were late in growth on account of drouth.

CORN—A large acreage planted but considerable drowned out on the lowlands. An average yield of early planted; frost damaged the late planting.

OATS—Light yield and poor quality.

WHEAT—Acreage small but of good qualilty.

RYE—None raised.

BARLEY—Good.

FLAX—None sown.

BUCKWHEAT—Very little sown and of poor quality.

MILLET—Small acreage and good yield.

SORGHUM—Good.

TIMOTHY—Very light crop on account of dry spring.

CLOVER—Fair.

PRAIRIE HAY—Acreage small but good yield.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Small yield and quality poor.

VEGETABLES—Good.

APPLES—Light crop.

OTHER FRUITS—Light crop, damaged by late frosts.

CATTLE—Condition good; not many being fed.

HORSES—Draft horses scarce and demand high prices; a noticeable improvement in the grade raised.

SWINE—Very few old ones on hand. Spring crop of pigs on a average with other years. No disease reported.

POULTRY—More attention given to this industry than formerly. A large number raised and in healthy condition.

BEES—Very few bees; condition good.

DRAINAGE—More drains being constructed each year. Fifty county drains in operation and a number more petitioned for. Good crops are being cultivated now on land which a few years ago was covered with ponds.

OTHER INDUSTRIES—New coal fields being opened and have ready market for their product; also brick and tile plants are working to their full capacity.

LANDS—Not much land changing hands, but prices range from ninety to one hundred and twenty-five dollars per acre.

REPORT OF FAIR—Held at Boone September 18 to 20. Good weather throughout the fair. Exhibits in most departments good, though light in live stock department. The first agricultural fair held in Boone for fifteen years and a growing interest promises well for its future success.

BUCHANAN.

CHAS. L. KING, INDEPENDENCE, SEPTEMBER 25, 1907

GENERAL CONDITION OF CROPS AND SEASON—Fair crops; season backward on account of excessive rains.

CORN—Seventy-five per cent of crop.

OATS—Fifty-five per cent of crop.

WHEAT—None.

RYE—Eighty-five per cent of crop.

BARLEY—Eighty per cent of crop.

FLAX—Eighty per cent of crop.

BUCKWHEAT—Amount harvested too small to estimate.

MILLET—Very little grown.

SORGHUM—Very little raised.

TIMOTHY—Good.

CLOVER—Good.

PRAIRIE HAY—Never better.

OTHER GRAINS AND GRASSES—Extra good.

POTATOES—Sixty per cent of crop.

VEGETABLES—All good except potatoes.

APPLES—Scarce.

OTHER FRUITS—Medium crop.

CATTLE—Good; prices high.

HORSES—Top notch prices.

SWINE—Good crop and good prices.

SHEEP—Average number.

POULTRY—Good year for poultry; prices never better.

BEES—Very few kept.

DRAINAGE—More put in than for two years previous.

LANDS—Prices range from sixty-five to one hundred and twenty dollars per acre depending upon location and improvements.

REPORT OF FAIR—Held at Independence, September 17 to 20.

BUENA VISTA.

WM. ZEILMAN, ALTA, OCTOBER 23, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops below the average for the past ten years. Temperature for the season considerable below the average for the spring months; remainder of the season about normal.

CORN—Acreage up to the average, but on account of cold backward season and early frosts the yield is estimated at about seventy-five per cent.

OATS—About eighty per cent of average crop; quality poor; acreage about the average.

WHEAT—Not much raised; fair quality and average yield.

RYE—Very little raised.

BARLEY—Eighty per cent of crop; quality poor on account of rust.

FLAX—Not much raised but of good quality and average yield.

BUCKWHEAT—Very little raised.

MILLET—Very little sown; average yield.

SORGHUM—None raised.

TIMOTHY—Good quality but light yield. Seed good, above the average.

CLOVER—New seeding good; second year poor; no seed.

PRAIRIE HAY—Average yield and good quality.

POTATOES—Yield above the average; quality good.

APPLES—Large crop but of poor quality.

OTHER FRUITS—Very scarce.

CATTLE—Average number of cattle raised, but in poor flesh, on account of late pastures; prices low.

HORSES—Number increasing and prices good.

SWINE—Average number raised and in good condition, except in southeastern part of the county where cholera is prevalent.

SHEEP—Gradually increasing in numbers and in a fair condition.

POULTRY—Not up to the average on account of cold spring.

BEES—Some bees lost during the winter and not a full crop of honey.

DRAINAGE—A great deal of tiling being done and a number of drainage districts formed in the county.

LANDS—Increasing in value from ten to twenty dollars per acre; considerable improvements being made.

REPORT OF FAIR—Held at Alta August 20 to 23.

BUTLER.

M. B. Speedy, Allison, October 5, 1907.

General Condition of Crops and Season—Rather poor.

Corn—Quality poor and not more than half a crop.

Oats—Below the average in yield; quality about an average.

Wheat—None raised.

Rye—Good quality; average about twenty-nine bushels to the acre.

Barley—Not much sown and yield poor.

Flax—Very little sown; crop poor on account of wet season.

Buckwheat—Very little sown but yielded a good crop.

Millet—Very little sown but quality good.

Sorghum—None raised.

Timothy—About an average crop.

Clover—Very little in the county but quality good.

Prairie Hay—Good.

Other Grains and Grasses—Below the average.

Potatoes—Poor; about one third crop.

Vegetables—Below the average on account of wet season.

Apples—Poor crop, having been injured by late frost in the spring.

Other Fruits—About an average crop.

Cattle—About an average.

Horses—About an average.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Average.

Drainage—About an average; considerable tiling has been done.

Other Industries—Average.

Lands—Not many sales, but price about sixty- dollars per acre on what has been sold.

Report of Fair—Held at Allison, September 17 to 19.

CALHOUN.

B. E. Sebern, Manson, October 10, 1907.

General Condition of Crops and Season—Season backward; crops fair

Corn—Fair; about two-thirds crop and about ten per cent of yield soft.

Wheat—Very little raised.

Rye—Very little raised.

Barley—Very little raised.

Flax—Very little raised.

BUCKWHEAT—Very little raised.

MILLET—Very little raised.

SORGHUM—Very little raised.

TIMOTHY—Fair crop.

CLOVER—Fair crop.

PRAIRIE HAY—Fair yield.

POTATOES—Good.

VEGETABLES—Good.

APPLES—Good.

OTHER FRUITS—No cherries or plums; everything else very good.

CATTLE—Good.

HORSES—Good.

SWINE—Fair crop of pigs; some cholera reported.

SHEEP—Not many kept.

POULTRY—Plentiful.

BEES—Average amount of honey.

DRAINAGE—Most farms drained.

LANDS—Prices range from seventy-five to one hundred and twenty-five dollars per acre; not much land on the market.

REPORT OF FAIR—Held at Manson, September 3 to 6. Pronounced by all a success; attendance good; exhibits fine. On account of the backward season the farmers did not have time to fit their stock, consequently the exhibit in this line was not as large as usual.

CALHOUN.

W. Q. STEWART, ROCKWELL CITY.

GENERAL CONDITION OF CROPS AND SEASON—Not up to average; backward spring and crops uneven in germinating, making corn two or three weeks late; late corn injured by frost on September 25th.

CORN—Seventy-five per cent of crop.

OATS—Seventy-five per cent of crop; uneven in weight, ranging from twenty-two to thirty pounds to the bushel.

WHEAT—None raised.

BARLEY—Quality good; yield not up to the average.

FLAX—Average crop.

BUCKWHEAT—None raised.

MILLET—None raised.

SORGHUM—None raised.

TIMOTHY—Average crop.

CLOVER—Average crop.

PRAIRIE HAY—None raised.

POTATOES—Fifty per cent of crop.

VEGETABLES—Seventy-five per cent of crop.

APPLES—Average crop.

OTHER FRUITS—Seventy-five per cent of crop

CASS.

E. E. MARQUIS, ATLANTIC, JANUARY 1, 1908.

GENERAL CONDITION OF CROPS AND SEASON—Season has been very unfavorable.

CORN—Average acreage; fair yield.

OATS—Poor yield and poor quality.

WHEAT—Fair yield; good quality.

RYE—Not much raised.

BARLEY—Small acreage; yield and quality good.

FLAX—None raised.

BUCKWHEAT—Small acreage; good quality.

MILLET—None raised.

SORGHUM—None raised.

TIMOTHY—Good.

CLOVER—Good.

PRAIRIE HAY—Good.

POTATOES—Average acreage; yield good.

VEGETABLES—Large crop; quality good.

APPLES—Poor.

OTHER FRUITS—Light crop.

CATTLE—Good.

HORSES—Increase in the number raised; prices good.

SWINE—Good condition; no disease.

SHEEP—Good condition and on the increase.

POULTRY—Large number raised; very profitable.

BEES—On the increase; output extra good.

DRAINAGE—Natural drainage, very little tile.

OTHER INDUSTRIES—Manufacturing on the increase.

LANDS—Prices steady, ranging from sixty to one hundred and twenty-five dollars per acre.

REPORT OF FAIR—Held at Atlantic, September 23 to 29. Weather conditions favorable; attendance good; fair a great success.

CASS.

C. L. HERRING, MASSENA, OCTOBER 22, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Good, except oats.

CORN—Good; better than an average.

OATS—Half a crop.

WHEAT—Fair to medium.

RYE—Very little grown.

BARLEY—Good.

FLAX—None.

BUCKWHEAT—None.

MILLET—Good.

SORGHUM—Good.

TIMOTHY—Fair to good.

CLOVER—Fair to good.

PRAIRIE HAY—Slough hay good.

POTATOES—Fair.

VEGETABLES—Good.

APPLES—Poor crop.

OTHER FRUITS—Poor crop.

CATTLE—Good crop; good price.

HORSES—More good colts; prices high.

SWINE—Good crop and healthy.

SHEEP—Good crop; good condition.

POULTRY—Good.

BEES—Good.

DRAINAGE—Considerable draining being done.

LANDS—Prices increasing.

REPORT OF FAIR—Held at Massena, September 9 to 12. Best in history of the association; attendance large; weather good.

CEDAR.

F. H. CONNER, TIPTON, OCTOBER 19, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops were thin in places and the season was two weeks late.

CORN—There will not be a great crop of grade corn; crop about sixty-five per cent.

OATS—Thin and very light.

WHEAT—Very little grown.

RYE—Fairly good in the east and south portions of the county.

BARLEY—Same acreage as last year, and fairly good crop in east and south portion of the county.

FLAX—None.

BUCKWHEAT—Not much planted and a poor stand.

MILLET—Scarce.

SORGHUM—None.

TIMOTHY—Light and thin.

CLOVER—Fairly good but seed light.

PRAIRIE HAY—Not much cut.

POTATOES—Quite a good acreage but a very poor yield.

VEGETABLES—Not very good; tomatoes did not ripen.

APPLES—Very poor crop.

OTHER FRUITS—Scarcely any this year.

CATTLE—Good.

HORSES—Getting better every year.

SWINE—Quality the best and a large number raised.

SHEEP—Better quality and more raised than last year.

POULTRY—More interest is being taken in poultry and larger numbers and better grades raised.

BEES—Not much honey this year.

DRAINAGE—Lands are fairly well drained but farmers are using more tile than last year.

OTHER INDUSTRIES—Canning factories report about the same amount of business as last year; brick yards are running day and night and other industries are running full force.

LANDS—Lands and town properties increasing in price.

REPORT OF FAIR—Held at Tipton, October 10 to 13. Weather fairly good. Although the attendance was somewhat light, we had the best fair in ten years; everyone was well pleased and the outlook is good for next year.

CERRO GORDO.

C. E. SOMERS, MASON CITY, OCTOBER 15, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Most unfavorable in twenty years.

CORN—Average twenty-four bushels per acre; quality fifty per cent.

OATS—Average acreage; quality sixty-five per cent; average twenty-two bushels per acre.

WHEAT—Very little raised.

RYE—Very little raised.

BARLEY—Average about fifty per cent.

FLAX—Very little raised.

BUCKWHEAT—Very little raised.

MILLET—Very little raised.

SORGHUM—Very little raised.

TIMOTHY—Average acreage; about one and a half tons per acre; quality fifty per cent.

CLOVER—Average acreage; about one and a quarter tons per acre; quality eighty per cent.

PRAIRIE HAY—Very little raised.

POTATOES—Little below average acreage; about fifty bushels per acre; quality fair.

VEGETABLES—Fair.

APPLES—Below normal.

OTHER FRUITS—Fair.

CATTLE—Normal condition; average number.

HORSES—Normal condition; average number.

SWINE—Good.

SHEEP—Small per cent raised; quality good.

POULTRY—Normal amount raised; condition good.

BEES—Very few kept.

DRAINAGE—Increased interest in drainage.

LANDS—Average price sixty-five dollars per acre.

REPORT OF FAIR—Held at Mason City, October 1 to 6. Was considered successful considering conditions.

CHICKASAW.

G. C. Hoyer, Nashua, October 10, 1907.

General Condition of Crops and Season—Season was cold and late and about three weeks late; crops were fair.

Corn—About half a crop, not a very good stand; about twenty-five per cent of crop is good marketable corn, balance soft.

Oats—Half a crop; quality very light.

Wheat—None.

Rye—Good.

Barley—Good.

Flax—None.

Buckwheat—Good.

Millet—Good.

Sorghum—Fair.

Timothy—Good.

Clover—Good.

Prairie Hay—Very good.

Other Grains and Grasses—Fair.

Potatoes—Yield good; but rot set in, especially in wet ground.

Vegetables—Very good.

Apples—Good.

Other Fruits—Good.

Cattle—In fine condition on account of good conditions.

Horses—Good condition.

Swine—Farmers are well supplied. Some are selling quite small on account of poor prospects for corn.

Sheep—Good condition.

Poultry—Very good.

Bees—Not many in the county.

Drainage—Most of the land is rolling but considerable has very poor drainage; on undrained land the crops were very small.

Lands—Lands continue to enhance in value in spite of light yield of crops this season.

Report of Fair—Held at Nashua, September 3 to 6. A successful fair in every respect; attendance very good and in all departments the display was fine. The exhibit in the cattle, horse and swine departments was far greater than on previous years.

CLAYTON.

Henry Luehsen, Garnavillo, September 25, 1907.

General Condition of Crops and Season—Not up to the average; season backward; too much rain.

CORN—Average crop about sixty to seventy per cent; a good deal of soft corn reported from all sections of the county.

OATS—Very light; about seventy per cent crop.

WHEAT—Very little raised.

RYE—Good but not much raised.

BARLEY—Good quality and good price.

FLAX—None raised.

BUKWHEAT—Very little raised.

MILLET—Up to the average.

SORGHUM—Good crop; quality fair.

TIMOTHY—Excellent crop.

CLOVER—About up to the average.

PRAIRIE HAY—Large crop; good quality.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Fair in yield and quality.

VEGETABLES—About up to the average.

APPLES—A good crop.

OTHER FRUITS—An average good crop.

CATTLE—Farmers continue to improve their already excellent herds; a number of herds of Short-horns, Herefords, Polled Angus, Red Polled and Galloways, and some fine specimens were on ehibit at our fair.

HORSES—Are bringing top notch prices; more raised than formerly.

SWINE—One of the principal industries in this section of the county, many of the farmers shipping from two to three carload every year.

SHEEP—Farmers are beginning to realize that sheep raising is a very profitable business; some very fine and large flocks in the county.

POULTRY—Another growing and profitable industry in this county.

BEES—An average crop.

DRAINAGE—Natural.

OTHER INDUSTRIES—We have a creamery which ships more butter than any creamery of its size in this county.

LANDS—Very fine, prices ranging from seventy-five to one hundred dollars per acre, but none for sale.

REPORT OF FAIR—Held at National, September 3 to 6. Fair weather except the last day when rain spoiled the attendance somewhat. The exhibits were large in every department, particularly the stock departments.

CLAYTON.

W. W. DAVIDSON, ELKADER, OCTOBER 25, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Up to the average year.

CORN—A little late and somewhat damaged by frost.

OATS—Good in some places, others light.

WHEAT—Good.

RYE—Very little raised.

BARLEY—Good yield and of fine quality.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—None raised.

SORGHUM—Good in quality.

TIMOTHY—Large crop and of good quality.

CLOVER—Good crop.

PRAIRIE HAY—None.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Good crop but late and affected by rot.

VEGETABLES—Excellent.

APPLES—Short crop but quality good.

OTHER FRUITS—Short crop.

CATTLE—Fine condition and selling well.

HORSES—Scarce and selling at high prices.

SWINE—The principal industry; large number raised and of good quality.

SHEEP—Very few raised.

POULTRY—Large number raised, mostly well bred.

BEES—None raised or kept.

DRAINAGE—Natural conditions excellent.

CLAYTON.

J. C. FLENNIKEN, STRAWBERRY POINT, OCTOBER, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Unfavorable season; crops below the average.

CORN—Fairly good but most of it did not mature.

OATS—Average yield but quality not the best.

WHEAT—Very little raised.

RYE—Good.

BARLEY—Good.

FLAX—None raised.

BUCKWHEAT—Good.

MILLET—Fairly good.

SORGHUM—Average acreage but quality poor on account of early frosts.

TIMOTHY—Good quality but yield a little light.

CLOVER—Fairly good.

PRAIRIE HAY—Usual yield.

POTATOES—Light yield and quality not the best.

APPLES—Light crop.

OTHER FRUITS—Average yield.

CATTLE—Special attention given to milch cows, this being a dairy section.

HORSES—A good many draft and roadsters raised.

SWINE—One of the leading industries of this community; several farmers make a specialty of raising the best breeds of stock.

SHEEP—Not many raised.

POULTRY—Large amount raised with profitable returns.

BEES—Yield of honey below the average.

Drainage—Natural conditions favorable for good drainage.

Other Industries—The largest creamery of its kind in the United States.

Lands—Good; crop failures unknown in this locality.

Report of Fair—Held at Strawberry Point, September 10 to 13. Exhibits up to the usual standard; premiums paid in full. Renewed interest manifested in many departments, especially in swine and poultry.

Other Industries—Thriving.

Lands—Continually advancing in price; large amount changing hands.

Report of Fair—Held at Elkader, September 17 to 20. Rain the middle of the week spoiled the attendance somewhat. Large exhibits in all departments.

CLINTON.

Phil Butterfuss, Clinton, September 23, 1907.

Corn—Very backward; good in spots; light frost September 22d.

Oats—Light in yield and weight; prices good.

Wheat—Very small amount raised.

Rye—Small amount raised; light weight.

Barley—None raised.

Flax—None raised.

Buckwheat—None raised.

Sorghum—None raised.

Timothy—A No. 1 large yield and high in price.

Clover—Good.

Prairie Hay—Good, but not much raised in this part of the county.

Potatoes—Not many planted and small yield.

Vegetables—Poor.

Other Fruits—Poor condition.

Cattle—Doing well and high prices prevail.

Horses—Well sold out at top notch prices.

Swine—A No. 1; plenty of them and prices good.

Poultry—Few in this part of the county but prices are good.

Bees—Very few kept.

Drainage—The low lands are well drained and more drains being put in.

Other Industries—Business of all kinds in a very satisfactory condition.

Report of Fair—Held at DeWitt, August 27 to 30. A rainy week but the attendance was good considering the weather. Races were slow on account of the heavy track; three hundred hogs were on exhibition and a good showing of horses; the show of farm products was light.

CLINTON.

J. B. AHRENS, CLINTON, OCTOBER 1, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops fair. The season has been very unfavorable this year. First frost September 21st damaged considerable corn.

CORN—Fair yield; will average about forty-five to fifty bushels per acre; quality fair.

OATS—Yielded only about twenty-five to thirty bushels per acre; of fair color.

WHEAT—Yielded twenty-five bushels per acre and of good quality.

RYE—Very little raised; averaged from twelve to fifteen bushels per acre.

BARLEY—Fair quality; yielded from twenty-five to thirty bushels per acre.

FLAX—None raised.

BUCKWHEAT—None raised in this vicinity.

MILLET—Very little raised, but fairly good yield.

SORGHUM—Very little raised; quality fair.

TIMOTHY—Good yield and of good quality.

CLOVER—Fair but of good quality.

PRAIRIE HAY—None raised.

OTHER GRAINS AND GRASSES—Fair to good.

POTATOES—Yield not up to a fair average.

VEGETABLES—Plentiful and of good quality.

APPLES—Not half a crop in this vicinity.

OTHER FRUITS—Very light crop.

CATTLE—The same as usual. The attention to breeding is improving.

HORSES—Scarce; good horses selling from $200 to $300. A great deal of attention is paid to breeding.

SWINE—Average number raised; at present dying with cholera.

SHEEP—Not many raised or kept.

POULTRY—Fairly good considering the weather.

BEES—None raised.

LANDS—Active demand for farm lands at prices ranging from $85 to $130 per acre.

REPORT OF FAIR—Held at Clinton, September 10 to 13. Weather extremely good. Cattle and swine exhibit taxed capacity; other exhibits fair except grains and fruits. Attendance unusually large.

CRAWFORD.

M. B. NELSON, ARION, SEPTEMBER 19, 1907.

GENERAL CONDITION OF CROPS AND SEASON—About two weeks late. Drouth in spring with cool weather retarded germination and growth. hay crop short and feed scarce and high. Season at close very favorable for maturing corn.

CORN—Will be about eighty per cent of last year's crop.

OATS—Light crop; average about sixty per cent of last year's crop; light weight.

RYE—Very little raised.

BARLEY—Eighty per cent of crop; fair quality.

FLAX—None raised.

BUCHWHEAT—None.

MILLET—Fair crop; little raised.

SORGHUM—Very little raised, fair crop.

TIMOTHY—About sixty per cent of last year's crop; good quality.

CLOVER—About ninety per cent of crop; good quality.

PRAIRIE HAY—Eighty-five per cent of crop; good quality.

POTATOES—Light crop, about seventy per cent; poor quality.

VEGETABLES—Good.

APPLES—Very scarce; fair quality.

OTHER FRUITS—Good crop of blackberries, grapes and raspberries; no peaches; very few cherries and plums.

CATTLE—Very good; supply going cheaper on prices of feed.

HORSES—Many colts raised the past two years but good horses are scarce and high, having been bought up last spring for shipping.

SWINE—Medium crop; some sickness due to worms; dying in some localities.

SHEEP—Fair; not many raised in the county.

POULTRY—Medium crop but late.

BEES—Fair; not many in the county.

DRAINAGE—Too good.

LANDS—Advanced from $10 to $25 per acre in the last year.

REPORT OF FAIR—Held at Arion September 11 to 13. The first fair for the present organization, the last county fair being held at Denison about fifteen years ago. Attendance good, and all well pleased. The aim is to make the premiums on stock and agricultural products especially strong and attractive and moderate on races and attractions. More permanent improvements contemplated for the coming year.

DAVIS.

J. C. BROUHARD, BLOOMFIELD, OCTOBER 24, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Although an excess of rain in May and June the general condition of crops has been good.

CORN—Large acreage; good yield and good quality.

OATS—Fair yield of good quality.

WHEAT—No spring wheat; winter wheat yielded about twenty bushels per acre and of good quality.

RYE—Small acreage; fair yield and good quality.

BARLEY—None raised.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Not extensively grown; yield of hay and seed good.

SORGHUM—Small acreage; quality good.

TIMOTHY—Good; the seed crop was the best in years.

CLOVER—Good.

PRAIRIE HAY—None.

POTATOES—Fair yield and of good quality.

VEGETABLES—Fair.

APPLES—A total failure, killed by late freeze.

OTHER FRUITS—Strawberries, blackberries and raspberries yielded fair and were of good quality; cherries, plums and peaches a failure.

CATTLE—An increased interest is being taken in the breeding of cattle generally; Short-horns predominate.

HORSES—A great many are raised and their breeding has been improved during the last few years, especially in the draft classes.

SWINE—A great deal of interest is taken in the improved breeds.

SHEEP—Not extensively raised but are of good quality; farmers who have kept them have found them a good investment.

POULTRY—A growing and profitable industry.

BEES—Wintered poorly; honey crop light.

LANDS—Range in price from $50 to $100 per acre.

REPORT OF FAIR—Held at Bloomfield, September 10 to 13. Attendance largest in the history of the society; exhibits good in all departments.

DELAWARE.

J. J. PENTONY, MANCHESTER, SEPTEMBER 30, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Very wet and backward.

CORN—About seventy-five per cent of usual crop.

OATS—About half a crop.

RYE—Small acreage but good.

BARLEY—Sixty-five per cent of the usual crop.

BUCKWHEAT—Very little raised.

MILLET—Very little raised.

SORGHUM—Good.

TIMOTHY—Good.

CLOVER—Good.

PRAIRIE HAY—Good.

POTATOES—Poor yield and poor quality.

VEGETABLES—Good.

APPLES—About an average crop.

OTHER FRUITS—Grapes good; plums killed by late frost in the spring.

CATTLE—Not much change from last year.

HORSES—Good horses are scarce and high.

SWINE—Full an average crop of hogs; good quality and free from disease.

SHEEP—Not many but good.

POULTRY—Good.

DRAINAGE—Fair; a good deal of tiling being done this fall.

OTHER INDUSTRIES—Dairies.

LANDS—Show steady increase in values.

REPORT OF FAIR—Held at Manchester, September 3 to 6. Attendance smaller than last year. Exhibit of horses best ever shown on the grounds, but cattle and hog ehibit not as good as last year.

EMMET.

A. J. RHODES, ESTHERVILLE, OCTOBER 23, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops in general are good. Early spring weather was favorable to planting, but later the heavy rainfall interfered with corn cultivation and damaged the crop on some of the wet farms. The weather for haying and harvest was exceptionally good. Late pasturage is in a fine condition.

CORN—Average yield about thirty-five bushels per acre. There were no early frosts and that partly counterbalanced the damaging effect of the spring rains.

OATS—Average yield about thirty-five bushels per acre; good quality.

WHEAT—Very little wheat is raised in this county.

RYE—Not extensively raised in this county but yield was good.

BARLEY—Average yield thirty-five bushels per acre; quality and color good.

FLAX—Yielded from ten to fifteen bushels per acre; quality good.

BUCKWHEAT—Not extensively raised in this county.

MILLET—Not extensively raised but of good quality.

SORGHUM—None raised.

TIMOTHY—Fine crop and well put up.

PRAIRIE HAY—An abundance of prairie hay this year both on the low and the upland.

CLOVER—Yield good though the acreage was small.

OTHER GRAINS AND GRASSES—This has been a splendid year for all small grains and grasses.

POTATOES—The best crop ever known in this country. There was a large exhibit of numerous varieties at the fair.

VEGETABLES—The yield of all vegetables was good in quality and quantity.

APPLES—The apple crop this year is the largest ever known in this county.

OTHER FRUITS—There was a fine exhibit of grapes at the fair.

CATTLE—Cattle raising is one of the principal industries in this county; many fine herds; Short-horns seem to predominate.

HORSES—Are extensively raised and breeders are using none but pedigreed stallions. Good young horses are selling at an average of $150 to $175 per head; a large number are shipped from this county.

SWINE—A very profitable industry, and a fine display at the fair.

SHEEP—Many farmers are raising sheep, but usually on a small scale.

POULTRY—Great interest is taken in poultry and some fine birds are owned in the county. A poultry show is given each winter.

Bees—Not many raised.

Drainage—Several county ditches under construction at this time and the farmers realize the advantage of extensive tiling.

Other Industries—Estherville has a flour mill, a butter factory, a clay tile factory and cement products factory. The tile and cement factories have been enlarged this year and the latter is making a large number of cement drain tile.

Lands—Hardly a foot of poor soil in this county. Most of the land is rich black loam. Improved farms are selling for $60 to $85 per acre.

Report of Fair—Held at Estherville September 23 to 28. The fair was considered a fine success, although the association owns no ground, a feed yard and sheds and a large brick building being rented to accommodate the exhibits. Exhibits in all departments were very good; two especially good features of the fair were the stock parade and the floral parade.

FAYETTE.

E. A. McIllree, West Union, October 10, 1907.

General Condition of Crops and Season—Unusually wet and cold.

Corn—Not more than half a crop.

Oats—Fair yield but light in weight.

Wheat—Very little sown, but of fair quantity and yield.

Rye—Not much sown.

Barley—Fair yield but poor quality on account of color.

Flax—None raised.

Buckwheat—Small acreage; fair quality.

Millet—Good yield and quality.

Sorghum—Frosted.

Timothy—About ninety per cent of average crop.

Clover—About the same as timothy.

Prairie Hay—Good yield and quality.

Potatoes—Not more than half a crop.

Vegetables—Generally good.

Apples—Not more than three-fourths of crop; quality generally poor.

Other Fruits—Strawberries three-fourths of a crop and of good quality; raspberries about half a crop; blackberries, good yield and quality.

Cattle—In good condition..

Horses—Numerous and in good condition.

Swine—Healthy and numerous.

Sheep—Good condition.

Poultry—Healthy and plentiful.

Lands—Increasing in value.

Report of Fair—Held at West Union, September 3 to 6. A success in every particular; all debts paid and money on hand.

FLOYD.

W. B. JOHNSON, CHARLES CITY, OCTOBER 28, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops as a rule below the average; fruits badly injured by frost. Fore part of the season very wet; fall fine and dry; killing frosts about the middle of September.

CORN—Very uneven; some pieces very good but there will be much soft corn.

OATS—Stand fair; quality rather poor and light.

WHEAT—Very little in county; quality fair and yield about average.

RYE—Small acreage; quality and yield fair.

BARLEY—Good stand; yield and quality above the average.

FLAX—Not raised to any extent.

BUCKWHEAT—Small acreage; quality fair.

MILLET—More sown than usual; quality and yield good.

SORGHUM—Very little raised.

TIMOTHY—Stand rather light; quality good.

CLOVER—Winter-killed to quite an extent; new seeding looking well.

PRAIRIE HAY—Yield and quality good.

POTATOES—Yield fair; quality good; some complaint of rot.

VEGETABLES—Below the average in yield and quality.

APPLES—Quality fine; crop about an average.

OTHER FRUITS—Small fruit only a partial crop.

CATTLE—Rather less than the usual number in the county; very few will be fed. Quality of stock being gradually improved.

HORSES—About the usual number of colts raised; draft breeds largely raised.

SWINE—About the usual number in the county; demand not as good as a year ago.

SHEEP—Very few in the county.

POULTRY—Fine condition; increasing quantity of poultry and eggs marketed; quality improving yearly.

DRAINAGE—Considerable tiling being done by individuals; no county drainage.

OTHER INDUSTRIES—Gasoline traction engine factory employs about 200 men; furniture and bank fixtures factory about 40; sash and door factory about 50; disc harrow factory about 40; nurseries employ about 300 men; also smaller industries.

LANDS—Demand fair; prices advancing.

REPORT OF FAIR—Held at Charles City September 10 to 13. Exhibits far surpassed those of previous years; attendance light owing to farmers being busy threshing and finishing up work which the wet season delayed.

FRANKLIN.

FLOYD GILLETT, HAMPTON, OCTOBER, 26, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Very poor crops and poor season; unseasonable weather.

CORN—Will not average more than about twenty bushels per acre.

OATS—Will average about fifteen to twenty bushels per acre.

WHEAT—Very little raised.

RYE—None raised.

BARLEY—Very little raised.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Fair crop.

SORGHUM—None raised.

TIMOTHY—About half a crop.

CLOVER—Was mostly frozen out.

PRAIRIE HAY—Very little left but a fair crop.

POTATOES—Yielded about forty bushels per acre.

VEGETABLES—Very poor year for vegetables.

APPLES—Fair crop but mostly shipped out.

OTHER FRUITS—Poor year.

CATTLE—Plenty of cattle but not much feeding being done.

HORSES—Many raised; demand good and prices high.

SHEEP—Very few raised.

POULTRY—Lots of poultry.

BEES—Not many kept.

DRAINAGE—Badly needed in some parts and a great deal being done.

OTHER INDUSTRIES—Practically nothing here but farming.

LANDS—Prices higher than ever.

REPORT OF FAIR—Held at Hampton September 10 to 12; attendance very good, and fair was a financial success.

GRUNDY.

C. E. THOMAS, GRUNDY CENTER, OCTOBER 20, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops below the average for the past five years. The season has been unfavorable and farmers have been unable to keep the weeds out of their corn and potatoes.

CORN—Poorest in years; very light and chaffy on account of wet weather.

OATS—Yielded about thirty-five bushels per acre; quality poor.

WHEAT—Small acreage; yield fairly good.

RYE—None raised.

BARLEY—Fair crop but badly colored.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—None raised except on low land; quality good.

SORGHUM—Very little raised.

TIMOTHY—Good crop.

CLOVER—Good crop.

PRAIRIE HAY—No prairie hay; some slough hay but of poor quality.

POTATOES—Very large acreage; yield uneven, from sixty to three hundred bushels per acre.

VEGETABLES—Small crop.

APPLES—Poor crop; badly damaged by wind.

OTHER FRUITS—Light crop.

CATTLE—In fine condition; very few being fed on account of scarcity of corn.

HORSES—Good grade but scarce, being bought close by eastern buyers.

SWINE—A great number in the county; some cholera in a few localities.

SHEEP—Not many in the county but of good quality.

POULTRY—All the best varieties raised in goodly numbers.

BEES—Not many; honey crop short.

DRAINAGE—County is well drained by small streams which afford a splendid outlet for tiling.

OTHER INDUSTRIES—Brick and tile factories are doing a good business.

LANDS—Rolling prairie with excellent natural drainage; soil is of a deep rich black loam underlaid with clay; prices from $100 to $130 per acre.

REPORT OF FAIR—Held at Grundy Center, September 10 to 12; the weather was fine and attendance good; all classes of exhibits were well filled and the fair was a financial success.

GUTHRIE.

T. E. GRISSELL, GUTHRIE CENTER, DECEMBER 1, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The season was favorable for corn but too dry for oats and hay in the earlier season of their growth.

CORN—An average crop in quality, but there is some complaint that it does not average up in feeding quality.

OATS—Poor in yield and quality.

WHEAT—Not enough raised to be taken as a factor.

RYE—Very little sown.

BARLEY—Good yield but little grown.

FLAX—None raised.

BUCKWHEAT—Not a staple crop.

MILLET—Only a small amount grown.

SORGHUM—None raised.

TIMOTHY—Of fine quality, but only about half a crop, owing to the dry weather in April and May.

CLOVER—Same condition as timothy.

PRAIRIE HAY—None raised.

POTATOES—About half a crop.

APPLES—Apples a failure.

OTHER FRUITS—A failure, except Damson plums.

SWINE—Some cholera exhibits in the northwest part of the county.

REPORT OF FAIR—Held at Guthrie Center, October 2 to 5. Weather was very unfavorable, Friday and Saturday being the only clear days of the week; the receipts were sufficient to pay expenses and premiums.

HAMILTON.

F. A. EDWARDS, WEBSTER CITY, OCTOBER 17, 1908.

CORN—About seventy per cent of a crop; quality fair to good.

OATS—About sixty per cent of crop; quality fair.

RYE—None raised.

BARLEY—None raised.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Very little raised but those who planted had a fine crop.

SORGHUM—None raised.

TIMOTHY—Eighty to eighty-five per cent; quality good.

CLOVER—Eighty to eighty-five per cent; quality good.

PRAIRIE HAY—Good crop.

POTATOES—Ninety-five per cent; quality good.

VEGETABLES—Fairly good.

APPLES—Poor yield.

OTHER FRUITS—Very poor.

CATTLE—Good; a few being fed.

HORSES—Good; prices excellent; many colts raised this year.

SWINE—Good; some sickness but outlook good.

SHEEP—Good; few raised but very successful.

POULTRY—Excellent.

BEES—Very few kept.

DRAINAGE—Several hundred thousand dollars are being invested by the county in drainage ditches in this vicinity; lots of small tiling.

OTHER INDUSTRIES—Good.

LANDS—Fairly active demand; prices range from $70 to $100 and $125 per acre.

REPORT OF FAIR—Held at Webster City, September 10-13; fair very successful.

HANCOCK.

JOHN HAMMILL, BRITT, OCTOBER 23, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Corn drying out well; crops forty per cent of normal; pastures good; fall plowing well along; season fine and frost delayed until September 28th.

Corn—Much soft corn; forty per cent will shell but will not keep expect the winter be continuously cold.

Oats—Light in weight and average twenty-five bushels; quality poor.

Wheat—Very little raised.

Rye—None raised.

Barley—But little raised.

Flax—Good but acreage light; yield seven to twelve bushels per acre.

Buckwheat—Good crop; nearly all ripened although some late.

Millet—Fine crop; mostly cut for hay.

Sorghum—None.

Timothy—Good crops but weather damaged much hay.

Clover—Average crop.

Prairie Hay—Average crop.

Potatoes—Fine on sandy or well drained land; some rot on mucky soil; acreage light.

Vegetables—Average or better.

Apples—Some orchards extra good, others very light to total failure on account of late spring frosts; probably two-thirds average crop in the county at large.

Other Fruits—Small fruits very light, owing to continued summer rains.

Cattle—Average crop or better; prices good; many brought in to feed.

Horses—High in price but sellers scarce. The county has been scoured by foreign buyers and A No. 1 horses went at seller's price.

Swine—Pretty well sold out at this date; high prices prevailed and soft corn crop made farmers cautious. Stockers about average in number; fat stock below the average in numbers at this time of the year.

Sheep—Very few kept here.

Poultry—High in price and crop about the average in numbers and quality.

Bees—Average yield of honey and hives in good shape for winter; hives usually very strong.

Drainage—More drainage every year; tile factories are behind with orders and many farmers cannot get tile this year.

Other Industries—Two tile factories running at full capacity most of the time; self propelling dredges manufactured and operated, also ditchers.

Lands—Selling no lower although sales have been slow on account of continuous rains.

Report of Fair—Held at Britt, September 4-6; attendance good, performance satisfactory; gate receipts, etc., ahead of expenditures.

HARDIN.

H. S. Martin, Eldora, September 21, 1907.

Corn—Stand about three-fourths.

Oats—Light.

Wheat—Fair.

Millet—Good.

TIMOTHY—Fair.

CLOVER—Light.

POTATOES—Poor.

VEGETABLES—Average.

APPLES—Light crop.

OTHER FRUITS—Grapes good, others light.

CATTLE—Average condition.

HORSES—In good condition.

SWINE—Healthy.

SHEEP—Good.

LANDS—Prices high.

REPORT OF FAIR—Held at Eldora, September 3-6.

HARRISON.

W. H. WITHROW, MISSOURI VALLEY, OCTOBER 26, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Owning to frequent rains in the early spring, planting was done quite late; corn crop will be about the usual average, with a larger acreage.

CORN—Crop will be about an average compared with former years.

OATS—Yield not up to the average; quality fair.

WHEAT—An increased acreage; yield and quality good, especially with fall wheat; prospects good for increased acreage next year.

RYE—Acreage averages with former years; quality and yield only fair.

BARLEY—Acreage about the same as in former years, with average yield and quality.

FLAX—Very little raised.

BUCKWHEAT—Usual yield and quality; not much raised.

MILLET—Good crop on high lands, but light on low lands owing to too much early rain.

SORGHUM—Usual acreage and average yield.

TIMOTHY—Crop about an average with former years with somewhat increased acreage.

CLOVER—Good yield on well drained land; nor good in low lands.

PRAIRIE HAY—A very large crop in drained lands; not so good on low lands.

POTATOES—Not as good quality as usual to this soil; acreage about an average; quantity not an average.

VEGETABLES—Very good quality but yield only about one-third of that of 1906, owing to late spring frosts.

OTHER FRUITS—Not quite up to the usual production.

CATTLE—Have done very well; not much summer feeding, majority of feeders prefering winter feeding.

HORSES—County not overstocked with horses, but improvement in breeding shown each year; producers are beginning to realize there is more profit in raising well bred stock.

SWINE—The usual number raised, but cholera has created havoc in some parts of the county.

Sheep—Very few farmers interested in sheep raising or feeding, but those few are feeding about the usual number.

Poultry—A good year for poultry and good home demand for well fed stock; apparently not much interest in raising fancy poultry.

Bees—Very little attention given to this industry, although it has proved profitable to those interested.

Drainage—Drainage system is nearly completed and the good effects will be very noticeable next year in the western part of the county.

Lands—Values remain steady, ranging from $50 to $100 per acre; quite a number of sales to eastern parties who will hold for increased prices.

Report of Fair—Held at Missouri Valley on September 17-19; weather was fine; entries of agricultural products very light; all premiums have been paid in full and all of the outstanding indebtedness will be wiped out.

HENRY.

O. N. Knight, Mt. Pleasant, October, 1907.

General Condition of Crops and Season—Weather conditions were generally good, except for harvest when it was too wet, and much small grain was lost on that account; a great season for grass and the fall has been ideal for ripening corn.

Corn—Yield about seventy per cent. Numerous replantings required to get a good stand, but many acres of late corn has matured beyond expectations and the quality is very good.

Oats—Unusually large acreage but wet weather during harvested damaged the crop badly; generally light in weight and yield about two-thirds of an average crop.

Wheat—Not extensively raised, but yield and quality good.

Rye—Not extensively raised but crop was considered very good.

Barley—Acreage small, but generally satisfactory.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Acreage small but yield heavy.

Sorghum—Good, though but few acres planted.

Timothy—An excellent crop.

Clover—Very good and a heavy second crop.

Other Grains and Grasses—Blue grass is our main pasturage and is always good.

Potatoes—Small acreage and only two-thirds crop.

Vegetables—Not quite up to the average.

Apples—A failure.

Other Fruits—A few peaches and grapes; a fair crop of berries.

Cattle—Not extensively fed in this county, but they are generally in good condition as pastures have been good.

Horses—An exceptional good class of draft horses in this county and some very good roadsters; saddle horses are scarce. Farmers are taking more interest in breeding.

Sheep—Are numerous in this county; in good demand and bring a very high price.

Swine—A big crop of spring pigs and they are generally in a healthy thriving condition.

Poultry—Is universally raised and return good profit.

Bees—Few kept.

Drainage—Good; much tiling is being done in this county.

Other Industries—Tile and brick works and numerous stone quarries, all doing a prosperous business.

Lands—Command good prices; many farms sold at $150 per acre.

Report of Fair—Held at Mt. Pleasant August 13-16 and was a very successful and satisfactory meeting. Exhibit of fruits and farm products light on account of lateness of season, but a good showing in all classes of live stock; racing was exceptionally good. Inclement weather somewhat interferred with the attendance on Thursday but the receipts for the week covered all premiums and purses and left a good surplus in the treasury.

HENRY.

Will D. Garmoe, Winfield, October 15, 1907.

General Condition of Crops and Season—Cold late spring caused seeding to be delayed and resulted in a poor stand of corn and oats.

Corn—Will make a fair yield of medium quality.

Oats—Not up to the average either in quality or quantity.

Wheat—Very little raised.

Rye—Only small quantity sown.

Barley—Little sown.

Flax—None raised.

Buckwheat—Acreage very small.

Millet—Small acreage; good yield.

Sorghum—Small amount planted but a fair yield.

Timothy—Good quality; heavy yield.

Clover—Crop very heavy.

Other Grains and Grasses—Blue grass pastures have been of excellent growth.

Potatoes—Good quality but only about half a crop.

Vegetablies—Generally good in quality but a short crop.

Apples—Very few and quality poor.

Other Fruits—All fruit crops short on account of cold backward spring and late frosts.

Cattle—In good condition.

Horses—In good condition except where distemper has been prevalent.

Swine—About the average number raised; generally in good condition but a few reports of cholera.

Sheep—Good and generally healthy; farmers are increasing their flocks.

Poultry—Large number raised; fancy stock increasing.

BEES—Very few kept.

DRAINAGE—Good; most of the land thoroughly tiled.

OTHER INDUSTRIES—Are in a prosperous condition.

LANDS—Have steadily increased in value; being generally level and well tiled are not affected by drouth or wet; prices range from $60 to $100 per acre.

REPORT OF FAIR—Held at Winfield, September 17-20. This was the second year under the new management; exhibits in live stock generally good, but short in agricultural products and fruits. The attendance was the largest in years.

HUMBOLDT.

JOHN CUNNINGHAM, HUMBOLDT, SEPTEMBER 24, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops are below the average on account of the backward spring and heavy rains in June. A destructive hailstorm occurred in July.

CORN—Backward; if no killing frosts occur before October 10th the corn will be of fair quality though below average yield.

OATS—Light in weight and yield.

WHEAT—Yield and quality fair.

RYE—None grown.

BARLEY—Very little grown; yield and quality good.

FLAX—None grown.

BUCKWHEAT—None grown.

MILLET—Very little grown but a fair crop.

SORGHUM—None raised.

TIMOTHY—Light yield.

CLOVER—Light yield.

PRAIRIE HAY—Light yield.

OTHER GRAINS AND GRASSES—A little alfalfa was grown and made a good crop.

POTATOES—Yield below the average; quality good.

VEGETABLES—Light crop.

APPLES—Good except in the district visited by hail.

OTHER FRUITS—Light yield.

CATTLE—In good condition; prices good.

HORSES—In good condition; prices very high.

SWINE—Good crop and free from disease.

SHEEP—Good crop and free from disease.

POULTRY—Rather light crop; no disease.

BEES—Have done fairly well.

DRAINAGE—A large amount of public drainage being done by the county and considerable private work started.

OTHER INDUSTRIES—In a flourishing condition.

LANDS—Moving slowly; prices range from $60 to $100 per acre.

REPORT OF FAIR—Held at Humboldt September 10-13; the best ever held here; large attendance. Exhibits in all lines except agricultural products the largest in the history of the fair.

IOWA.

ALEX McLENNAN, MARENGO, OCTOBER 23 1907.

GENERAL CONDITION OF CROPS AND SEASON—The quality of crops in general not good on account of cold wet spring and late frosts; considerable fall plowing being done; fall pastures good and stock in good condition.

CORN—About seventy-five per cent of crop, of mixed quality; much had to be replanted. About two-thirds of the crop was out of danger of the frost on September 24th; balance more or less harmed; will be chaffy.

OATS—Light in yield and quality; average about twenty-four bushels per acre; good harvesting weather; straw and grain look bright.

WHEAT—But very little grown; yield from ten to twenty bushels per acre; of excellent quality.

RYE—Very little grown; good yield and quality.

BARLEY—About the usual acreage; fair quality.

FLAX—None raised.

BUCKWHEAT—Very little grown.

MILLET—Very little grown.

SORGHUM—Very little grown but quality good.

TIMOTHY—Very short on account of cold wet spring; quality of hay and seed excellent but yielded light.

CLOVER—Not much harvested except for hay; a good year for clover and last spring's seeding is exceptionally good.

PRAIRIE HAY—None in the county.

POTATOES—Very small yield but of excellent quality; many shipped in and are selling at seventy-five cents per bushel.

VEGETABLES—About the average amount raised and quality very good.

APPLES—Very scarce on account of late frosts in the spring; some late apples and of good quality.

OTHER FRUITS—Peaches good in most localities where grown; not many trees in the county although the number is increasing. Light crop of plums and cherries on account of late frosts.

CATTLE—Larger number than usual on exhibition at our fair and of better breeding and quality; Aberdeen Angus, Herefords and Short-horns predominate. General condition good, better than last year; fall pastures good and cattle will be in fine shape for the winter.

HORSES—Good demand and higher prices for good horses than for a number of years; there is a tendency among the farmers to raise more horses and raise only the best. Many western horses shipped in and met with ready sale at good prices.

SWINE—Pig crop fair; better than last year; all well bred. No cholera in the county and prices are good.

SHEEP—Not generally raised among the farmers.

POULTRY—Increasing interest taken in poultry raising; large number on exhibition.

BEES—Very few stands in the county.

DRAINAGE—Considerable wet land has been reclaimed in the past year, both by machinery and hand tiling; increase considerable over last year's work.

OTHER INDUSTRIES—Woolen and flouring mills report increase over last year's business and are behind with orders. Canning factories did not do as well on account of unfavorable season. Creameries have done an exceptional business this year. Brick and tile factories report good business and are behind with orders.

LANDS—Improvement in methods of cultivation and more attention being given to fertilizing. The use of manure spreaders increased one hundred per cent over last year. More intensive farming practiced by the farmers. Building improvements on the increase. Farm lands range in price from $75.00 to $150 per acre.

REPORT OF FAIR—Held at Marengo, September 10-13. Ideal weather and very large attendance. Largest exhibit of stock, poultry and machinery ever on the grounds; exhibit of farm products light on account of lateness of the season; exhibit of fine arts the finest ever on the grounds. More new features in entertainment and instruction than ever before.

IOWA.

J. P. BOWLING, VICTOR, SEPTEMBER 16, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Season backward.

CORN—Acreage not as large as last year. If frost holds off corn will make a fair crop of fair quality.

OATS—Poor quality and small yield.

WHEAT—Not much raised but quality good.

RYE—Fair crop and of fair quality.

BARLEY—Fair in quantity and quality.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Very little raised.

SORGHUM—Very little raised.

TIMOTHY—Good crop and of good quality.

CLOVER—Good crop and of good quality.

PRAIRIE HAY—Good crop.

POTATOES—Very light crop.

VEGETABLES—Good.

APPLES—Fair.

OTHER FRUITS—Poor.

CATTLE—Good price.

HORSES—Scarce, and prices high.

SWINE—Good prices, and good reports from all over the county.

SHEEP—Not many raised.

POULTRY—Good prices.

BEES—None kept.

LANDS—Good prices prevail.

REPORT OF FAIR—Held at Victor, August 13 to 15.

IOWA.

Chas. Fletcher, Williamsburg, October 15, 1907.

General Condition of Crops and Season—Not up to normal in this section; spring too cold. Corn was of slow growth in the early part of the season and weeds alomst took possession of some fields.

Corn—Early corn planted on favorable ground yielded about a normal crop, but farmers generally report the yield uneven and light in yield.

Oats—Not up to normal in either yield or quality.

Wheat—Very little sown in this section.

Rye—None sown.

Barley—None sown.

Flax—None sown.

Timothy—Crop was exceptionally good, especially in quality.

Clover—About normal.

Prairie Hay—Scarcely any in the county.

Potatoes—A poor yield both in quality and quantity.

Apples—Light crop owing to late frosts in the spring.

Cattle—The splendid showing at our fair indicates a growing interest in this branch of farm industry.

Horses—Good; many sold.

Swine—Farmers make a specialty of this industry; Duroc Jersey, Poland China and Chester White breeds prevail.

Sheep—Very few raised.

Poultry—An increased interest in this industry and both poultry and eggs are brought to market in large quantities.

Lands—Prices range from $80 to $160 per acre, according to the locality and improvements.

Report of Fair—Held at Williamsburg September 3-6 and was a pleasing and successful meeting. Exhibits in all departments were good and there seems to be a growing interest in the fair as an educational factor.

JACKSON.

B. D. Ely, Maquoketa, September 8, 1907.

General Condition of Crops and Season—Season has been wet and backward.

Corn—Will be a short crop on account of wet backward spring.

Oats—Will be the shortest crop and the poorest quality ever known in this county.

Wheat—Not much sown but yield was of fairly good quality.

Rye—Very little sown.

Barley—Fair yield and good quality.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Very little sown.

SORGHUM—Not much raised in this county.

TIMOTHY—Very good crop both in quality and yield.

CLOVER—Big crop.

PRAIRIE HAY—None grown.

POTATOES—Very good yield and quality, but some complaint of rot on account of wet weather.

VEGETABLES—Good.

APPLES—A failure.

OTHER FRUITS—Very good crop of blackberries but no other fruits.

CATTLE—County well stocked with the best grade.

HORSES—High prices have induced farmers to raise more colts than formerly.

SWINE—Large number raised and no disease reported.

SHEEP—Very few raised.

POULTRY—A growing industry in this county; exhibit at the fair larger and better than ever before.

BEES—A great many kept and a large amount of honey was shipped this year.

DRAINAGE—Have good natural drainage.

OTHER INDUSTRIES—The burning of lime is about the only other industry in this county.

LANDS—Increasing in price every year; farms being sold for $125 per acre.

REPORT OF FAIR—Held at Maquoketa, September 3-6. Most successful fair ever held. Exhibits were a little light in some departments; races were good. The weather was fine and the attendance the largest on record for this fair.

JASPER.

E. L .MCMURRAY, NEWTON, OCTOBER 1, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Good.

CORN—Full crop.

OATS—Light.

WHEAT—Small acreage.

RYE—Very little raised.

BARLEY—Very little raised.

FLAX—Very little raised.

TIMOTHY—Good crop.

CLOVER—Good crop.

PRAIRIE HAY—Good crop.

POTATOES—Fair crop.

VEGETABLES—Crop short.

APPLES—Crop short.

REPORT OF FAIR—Held at Newton, September 9 to 12.

JEFFERSON.

D. R. Beatty, Fairfield, October. 1907.

General Condition of Crops and Season—Good.

Corn—Good.

Oats—Fair; damaged by rain.

Wheat—Good although acreage small.

Rye—Fair; small acreage sown.

Barley—Very little sown.

Flax—None sown.

Buckwheat—Small acreage.

Millet—Fair crop.

Sorghum—Fair crop.

Timothy—Good.

Clover—Good.

Prairie Hay—None.

Vegetables—Good.

Apples—Very light crop and poor quality.

Other fruits—Berries a good crop.

Cattle—Good.

Horses—Good quality.

Swine—Good quality and plenty of them.

Sheep—Very few kept.

Poultry—Good; many raised.

Other Industries—Hay tools and wagon factory, iron foundry and many smaller factories, all in a flourishing condition.

Lands—Prices high.

Report of Fair—Held at Fairfield, September 10 to 13; weather fine and the fair fairly well patronized; good show of horses, hogs and cattle.

JONES.

J. J. Locher, Monticello, October, 1907.

General Condition of Crops and Season—Fair; all crops more or less affected by the late, rainy season.

Corn—Average crop; some will be a little soft.

Oats—Small yield, light in quality.

Wheat—Very little raised.

Rye—Very little raised.

Barley—Quality very good.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Fair.

SORGHUM—Little planted.

TIMOTHY—Good crop, plenty of hay.

CLOVER—Good crop.

PRAIRIE HAY—Little if any.

OTHER GRAINS AND GRASSES—Grass in abundance the entire season.

POTATOES—Poor yield; too much moisture.

VEGETABLES—Below the average.

APPLES—Very few.

OTHER FRUITS—Poorest in years excepting an abundance of grapes.

CATTLE—In fine condition owing to abundance of feed.

HORSES—Good demand and raising of same profitable.

SWINE—Large crop of pigs.

SHEEP—Few if any raised in this community.

POULTRY—Good prices prevail and a goodly number raised.

BEES—A good year; yield of honey large.

DRAINAGE—A great deal of tile being laid.

OTHER INDUSTRIES—Thriving.

LANDS—Steadily increasing in value.

REPORT OF FAIR—Held at Monticello, September 2 to 6. Most successful fair in the history of the association. Agricultural exhibits light.

JONES.

L W. RUSSELL, ANAMOSA, OCTOBER, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Very wet season.

CORN—About three-fourths of a crop; quality only fair.

OATS—Very small crop; poor quality.

WHEAT—Very little raised.

RYE—Very little raised.

BARLEY—Very little raised.

FLAX—None.

BUCKWHEAT—None.

MILLET—None.

SORGHUM—None.

TIMOTHY—Good crop and good quality.

CLOVER—Good crop and good quality.

PRAIRIE HAY—None.

OTHER GRAINS AND GRASSES—Pastures fine.

POTATOES—Crop and quality fair.

VEGETABLES—Fair.

APPLES—None.

CATTLE—A good year for cattle.

HORSES—In good condition.

SWINE—Good.

SHEEP—Very few.

POULTRY—Good year.

BEES—Very few kept.

DRAINAGE—Good.

Report of Fair—Held at Anamosa, August 26 to 30. Good attenance considering that the weather was rainy the entire week Exhibits in the stock departments and floral hall were exceptionally strong, as were also the free attractions. Under the circumstances the fair was a grand success.

KEOKUK.

Geo. A. Poff, What Cheer, October 14, 1907.

General Condition of Crops and Season—Fair.

Corn—Fair crop; average from forty to fifty bushels per acre.

Oats—Will average from twenty to thirty bushels to the acre, and much of it is poor quality.

Wheat—Small acreage; average yield fifteen to twenty-five bushels.

Rye—Small crop.

Barley—Small acreage but good crops; yield about twenty bushels per acre.

Flax—None raised.

Buckwheat—None.

Millet—Small acreage.

Sorghum—Very little.

Timothy—Good crop and fine quality.

Clover—Good; will average two tons to the acre.

Prairie Hay—Good yield and good quality.

Other Grains and Grasses—Good; fall pastures very good.

Potatoes—Will yield from seventy-five to eighty bushels per acre.

Vegetables—Very plentiful and of good quality.

Apples—Fair crop and selling at a good price.

Other Fruits—A good yield.

Cattle—Cattle are in fine condition; several large herds of fine stock.

Horses—Doing well; a number of breeders and dealers in imported stock in this county.

Swine—A great many raised and of the best breeds.

Sheep—Doing well, although not so many raised as in former years.

Poultry—This industry is increasing and is fast becoming a very profitable one for the farmer.

Bees—An average crop of honey.

Drainage—A great deal of tiling is being done.

Lands—Sell for $75 to $110 per acre, according to improvements.

Report of Fair—Held at What Cheer, September 23 to 26. With the exception of one day the weather was very unfavorable. Large exhibit of horses, cattle and swine; races were the best for several years and the attractions first class. Fifteen hundred dollars was expended for improvements on the grounds during the year.

KOSSUTH.

T. H. WADSWORTH, ALGONA, SEPTEMBER 23, 1907.

GENERAL CONDITION OF CROPS AND SEASON—A cold, wet season, unfavorable for growing crops.

CORN—Quite a good crop of corn will be gathered; better than anticipated a month ago.

OATS—Yield from twenty to thirty-five bushels per acre but rather light in weight.

WHEAT—Little raised.

RYE—Very little raised.

BARLEY—An average crop.

FLAX—Very little raised.

BUCKWHEAT—Very little raised.

MILLET—An average crop.

SORGHUM—Good crop.

TIMOTHY—Good crop.

CLOVER—A good average yield.

PRAIRIE HAY—A good average crop.

POTATOES—Yielding very well, but some complaint of rot.

VEGETABLES—A good display at the fair.

APPLES—A good crop of summer and fall apples.

OTHER FRUITS—Not as good as usual.

CATTLE—Are looking fine; some fine pure bred cattle on exhibition at the fair.

HORSES—Not as plentiful as a few years ago but are of good quality. A good show of horses at the fair.

SWINE—A good many in the county; a fine show of exceptionally good swine at the fair.

SHEEP—Sheep raising is not followed to any great extent, yet there are some very good sheep in the county.

POULTRY—Quality improving.

BEES—Have done well.

DRAINAGE—Much drainage being done, both with tile and large open ditches.

LANDS—Not much being sold but prices have advanced over those of former years.

REPORT OF FAIR—Held at Algona, Septemebr 10 to 13. A great success; the weather was pleasant and the attendance large. A new amphitheatre, a horse barn and a hog house were built this year.

LEE.

CHRIS HAFFNER, DONNELLSON, SEPTEMBER 30 1907.

GENERAL CONDITION OF CROPS AND SEASON—Forepart of the season was cold and wet; crops fair but backward on account of unseasonable weather.

CORN—Fair to good.

OATS—Yield light and quality poor.

WHEAT—Yield good but somewhat damaged by wet weather.

RYE—Good quality and good yield.

BARLEY—None raised.

FLAX—None raised.

BUCKWHEAT—None.

MILLET—None.

SORGHUM—Fair crop.

TIMOTHY—Yield good; quality only fair.

CLOVER—Light crop.

PRAIRIE HAY—None.

POTATOES—Fair crop and of good quality.

VEGETABLES—Good.

APPLES—A total failure.

OTHER FRUITS—None.

CATTLE—Short-horn and Polled Angus breeds predominate.

HORSES—Roadsters and Percherons predominate.

SWINE—Duroc Jersey, Poland China and Chester White breeds predominate.

SHEEP—Shropshire and Delaines predominate.

POULTRY—All kinds raised in large quantities

BEES—Very few kept.

DRAINAGE—Good.

LANDS—Range in price from $80 to $125 per acre.

REPORT OF FAIR—Held at Donnellson, September 4 to 6. Exhibits were very good in all departments. The weather was exceptionally favorable the entire week and the attendance large. The fair was a success in every particular.

LEE.

JOHN WALLJASPER, WEST POINT, SEPTEMBER 23, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Unfavorable; a late backward spring and too much rain during harvest.

CORN—Late in maturing; much replanting was necessary; estimated yield three-fourths of a crop.

OATS—Fairly good; average crop.

WHEAT—Very good but somewhat damaged by wet weather at harvest; average in yield and about the average in quality.

RYE—Very good.

BARLEY—Very little sown.

FLAX—None sown.

BUCKWHEAT—Small acreage; average crop.

MILLET—Very little sown.

SORGHUM—Not much planted; season too wet.

TIMOTHY—A good average crop of hay.

CLOVER—Good.

PRAIRIE HAY—None.

Potatoes—Poor in quality and quantity.

Vegetables—Fair yield; quality good.

Apples—Crop a failure on account of late spring frosts.

Other Fruits— Light yield.

Cattle—Many high grade cattle in this vicinity, for which the fairs are responsible; the state fair educates the breeders and the county and district fairs educate the other farmers in this line.

Horses—Horses have grown in importance the past five years and prices are high. Many western horses have been sold here on account of prices being too high for good and well bred horses.

Swine—This industry is greatly responsible for the present prosperity; prices are good and there is little disease.

Poultry—Quality is improving.

Bees—Did well

Drainage—Much tiling being laid in the level lands.

Other Industries— Thriving; plenty of room for more factories.

Lands—Prices steadily advancing.

Report of Fair—Held at West Point, August 20 to 22. Attendance was somewhat reduced on account of the farmers being too busy with delayed harvests to attend. The horse and cattle exhibits were fair; the swine, sheep and poultry exhibits first class; races were the best ever held on our grounds. All in all our fair was a success.

LINN.

E. E. Henderson, Central City, October 4, 1907.

General Condition of Crops and Season—Season very wet; corn and all grains very weedy.

Corn—Not over three-fourths stand; fairly well matured; less than usual cut for fodder.

Oats—Very light yield and of poor quality.

Wheat—None raised.

Rye—Very little raised; light yield.

Barley—Fair average yield.

Flax—None raised.

Buckwheat—Very little grown; light yield.

Millet—Good; small acreage.

Sorghum—Very little raised.

Timothy—Fair average yield of good quality.

Clover—Fair crop; spring seeding doing fine.

Prairie Hay—Very little raised; light yield and not very good quality.

Other Grains and Grasses—Blue grass pastures in fine condition.

Potatoes—Fair in quality and yield.

Apples—Poor crop.

Cattle—In splendid condition; pastures have been good. This is a dairy country and nearly all farmers sell milk or cream to local creameries.

Horses—In good demand; good ones are scarce and prices are high.

Swine—Average in number; no sickness reported.

SHEEP—This industry is increasing; mostly high grade flocks.

BEES—Poor season for bees.

LANDS—Very few farms offered for sale; values range from $75 to $100 per acre.

REPORT OF FAIR—Held at Central City, September 10 to 13. Splendid Weather; largest attendance and largest exhibits in several years; purely an agricultural fair, with no racing.

LOUISA.

A. H. RUNDORFF, WAPELLO, OCTOBER 30, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Fair.

CORN—Fair.

OATS—Not very good.

WHEAT—Very good; better than average.

RYE—Very fair.

BARLEY—None raised.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Good average crop.

SORGHUM—Light crop.

TIMOTHY—Fair.

CLOVER—Good average crop.

PRARIE HAY—None.

POTATOES—Light crop.

VEGETABLES—Fair, except cabbage.

APPLES—None.

OTHER FRUITS—Fair crop of small fruits.

CATTLE—Many stock cattle; few dairy cattle.

HORSES—Good horses scarce; prices high.

SWINE—Many spring pigs.

SHEEP—Very few kept.

POULTRY—An abundance; prices high.

DRAINAGE—Much tiling is being done.

LANDS—High prices prevail.

REPORT OF FAIR—Held at Wapello, September 25 to 27. On account of unfavorable weather the fair was not a financial success.

LOUISA.

J. R. SMITH, COLUMBUS JUNCTION, SEPTEMBER. 28, 1907.

GENERAL CONDITION OF CROPS AND SEASON—General condition is good; too much rain in the early part of the season prevented the necessary cultivation of growing crops in many cases.

CORN—In prime condition on high rolling lands and safe from danger of frost; on low lands the crop is injured by excessive rains.

OATS—Yield in measured bushels was up to the average, but of light weight; small injury by green bugs.

Wheat—Wheat growing has been somewhat neglected but acreage is largely increasing; mostly winter varieties; yield and quality good.

Rye—Is steadily grown on the lighter soils. Yield about normal.

Barley—Fair; but little grown except with oats for feed.

Flax—None grown.

Buckwheat—Good.

Millet—Very rank growth.

Sorghum—Fair.

Timothy—Excellent; the principal hay crop, generally grown with clover.

Clover—Good.

Prairie Hay—But little grown; tendency increases to run to weeds.

Potatoes—On loose dry soil, quality good but yield small; on heavy moist land the crop is poor.

Vegetables—Have done well.

Apples—Very nearly a failure, both in quality and quantity.

Other Fruits—Very nearly a failure.

Cattle—Have done well; appearances indicate that not the usual number will be fed on account of high price of stock for feeding and the price of corn.

Horses—One of the leading industries; condition of stock good; prices firm.

Swine—General condition good; some isolated cases of cholera reported in a few localities.

Sheep—Not grown in large numbers but in good condition.

Poultry—A large and profitable industry; condition good.

Bees—Have not done well.

Drainage—Some extensive drainage systems are in process of construction in the county. Tile drainage is steadily increasing.

Other Industries—Two pearl button factories and a canning factory in the county.

Lands—Not so much changing hands as formerly; prices firm.

Report of Fair—Held at Columbus Junction, August 27 to 30. The attendance was good, but exhibit of stock was not up to that of former years. Receipts will about equal the expenses.

LYON.

A. S. Wold, Rock Rapids, October 22, 1907.

General Condition of Crops and Season—Crops generally good. The season has been favorable and farmers have been able to attend to their crops in proper time.

Corn—Acreage large and conditions have been very favorable for its growth and maturity; average yield thirty-five bushels per acre; quality good.

Oats—Yield good, but light in weight; average forty bushels per acre.

Wheat—Acreage small; quality good, yield an average of twelve bushels per acre.

RYE—Very little raised; yield about forty bushels per acre.

BARLEY—Yield good; quality first class; averages thirty bushels per acre.

FLAX—Very little raised; yield twelve bushels per acre.

BUCKWHEAT—Small acreage.

MILLET—Yield good.

SORGHUM—None raised.

TIMOTHY—Large acreage and good crop; acreage increasing every year.

CLOVER—More clover being sown each year; crop this season was very heavy.

PRAIRIE HAY—Small acreage.

OTHER GRAINS AND GRASSES—Pastures did well this season.

POTATOES—Acreage large; quality first class and yield very large; will ship four hundred car loads this year.

VEGETABLES—Matured in good season and were of the best quality.

APPLES—A large yield of all varieties; quality good; some being shipped.

OTHER FRUITS—All kinds of small fruits, including grapes and plums, yielded a large and excellent crop.

CATTLE—In fine condition; a majority of the farmers have dairy herds; feeders will be fully up to last year's number.

HORSES—Scarce and high in price; many colts being raised; a number of high class pure bred stallions in the county.

SWINE—Have done well; prices high and there is a big demand for shoats; no disease reported.

SHEEP—This industry is increasing; many pure bred flocks in the county, also a great many western sheep being fed.

POULTRY—A profitable industry and more attention is being paid to the better breeds than in former years.

BEES—A paying industry and increasing each year.

DRAINAGE—Natural conditions very good, but farmers are doing a great deal of sub-drainage, making it possible to cultivate all the flat and slough lands, thereby increasing the value of the farms.

LANDS—Deep black loam with heavy yellow clay subsoil. Will stand considerable rain and requires more than the ordinary dry weather to affect crops; prices range from $65 to $100 per acre.

REPORT OF FAIR—Held at Rock Rapids, September 3 to 6. The weather was favorable and the fair a grand success. Entries in all departments were heavy, especially in the horse department. Extensive improvements in the way of buildings were made this year and prospects for the future of the fair were never brighter.

MADISON.

ELMER ORRIS, WINTERSET, OCTOBER 31, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Good. Season fair.

OATS—Light crop. About 25 per cent of average yield.

CORN—About 90 per cent of an average yield.

WHEAT—Not much raised. Fair yield.

RYE—About 75 per cent of an average yield.

Barley—Not much raised. Fair yield.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—Good yield and quality, but very little raised.

Timothy—An average yield.

Clover—Good.

Prairie Hay—None to cut in this locality.

Potatoes—Light crop.

Vegetables—Good.

Apples—About one-half the usual yield.

Other Fruits—Light yield.

Report of Fair—Held at Winterset September 24 to 27. Had the best exhibit ever held in the county in all classes, but weather was against us and on account of rain and lack of attendance the last day we had hard work to meet the indebtedness of the society which was brought about by improvements.

MAHASKA.

T. S. Osborne, New Sharon, September 25, 1907.

General Condition of Crops and Season—Crops were fair. Season about two weeks late in opening up.

Corn—Good crop. Nearly all out of the way of frost.

Oats—Poor yield and quality.

Wheat—Very little raised.

Rye—Small acreage, but good quality.

Barley—Fair crop.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—Only small patches raised; late in maturing.

Timothy—Splendid yield, good quality and good price.

Clover—Extra good hay crop, but poor prospects for seed.

Prairie Hay—Not any to cut in this locality.

Potatoes—Small acreage, but a fair yield.

Vegetables—Generally good.

Apples—Poor quality and small yield.

Other Fruits—Good.

Cattle—Feeders are looking forward and making preparations for early feeding, with prospects of getting good prices.

Horses—Out of sight in price. Most of the breeders are raising draft horses.

Swine—Cholera has been causing some heavy losses, but we have it well eliminated at present. Prices have been good.

Sheep—Good demand for sheep in this locality and they bring a good price.

Poultry—None better.

Bees—Not many here.

DRAINAGE—Practically all farms are well tiled out.

LANDS—Price ranges from $100 to $125 per acre.

REPORT OF FAIR—Held September 17 to 20 at New Sharon. Good attendance, paid all premiums in full and had some money left in the treasury. Best showing of live stock in the history of the association.

MARION.

T. D. TICE, PELLA, OCTOBER 26, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The backward season affected the crops.

CORN—An average crop.

OATS—Very light.

WHEAT—Average; little sown.

RYE—Average.

BARLEY—Average.

SORGHUM—Good average crop.

TIMOTHY—Crop about seventy-five per cent.

OTHER GRAINS AND GRASSES—Fair.

POTATOES—Half a crop.

VEGETABLES—Half a crop.

APPLES—Light crop.

OTHER FRUITS—None.

CATTLE—Eighty per cent; farmers selling freely on account of high price of land.

HORSES—Eighty per cent; prices high; marketed as soon as possible.

SWINE—Ninety per cent; some sickness.

SHEEP—One hundred per cent; seem to be on the increase.

POULTRY—Ninety per cent; in good demand.

BEES—Did not do well, owing to unfavorable season.

DRAINAGE—Compares with former years; about seventy-five per cent.

OTHER INDUSTRIES—Prosperous.

LANDS—Increasing in value; prices range from $75 to $125.

REPORT OF FAIR—Held at Pella, September 24 to 27. Weather unfavorable. Small debt after payment of premiums and expenses. Every department was well represented except the horse department.

MARSHALL.

W. M. CLARK, MARSHALLTOWN, OCTOBER 15, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The season has been backward and crops are below the average.

CORN—A very poor stand; crop will not average over sixty-five per cent of the usual yield.

OATS—Light in weight; yield thirty to thirty-five bushels per acre.

WHEAT—Yield of winter wheat twenty-two to twenty-five bushels per acre; spring wheat eighteen to twenty bushels.

RYE—Very little raised.

BARLEY—But little raised; quality fair.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Small acreage; quality and yield good.

SORGHUM—Only a small quantity raised for local consumption; damaged by early frost.

TIMOTHY—A fair yield of hay and of good quality.

CLOVER—About the average; light yield of seed.

PRAIRIE HAY—None.

POTATOES—A good average yield and of nice size and quality.

VEGETABLES—Good.

APPLES—A light crop but of fair quality.

OTHER FRUITS—Below the average; plums and cherries a failure; some peaches raised as an experiment, with excellent results.

CATTLE—Are looking well and healthy.

HORSES—More attention being paid to the breeding of draft horses for eastern markets; prices high.

SWINE—One of the leading industries in the county; many fine herds of pure bred swine and in a healthy condition.

SHEEP—Number of sheep raised is increasing and proving a profitable investment for the farmer.

POULTRY—Large numbers raised; prices of eggs and poultry high.

BEES—None kept for commercial purposes.

DRAINAGE—Some drains being constructed along the bottom lands adjacent to the Iowa river, with very beneficial results; a large drain is now under construction in Marshall and Story counties.

OTHER INDUSTRIES—Manufacturing of buggies, furnaces, iron and steel bridges, gasoline engines, steam governors and many other articles are on the increase and proving profitable to the manufacturers.

LANDS—Land is steadily increasing in value; farms with good improvements are selling from $90 to $125 per acre.

REPORT OF FAIR—Held at Marshalltown, September 16 to 20. Exhibits crowded every available space, especially in the swine and fruit departments; in the latter department several varieties of peaches as well as perpetual bearing strawberries were exhibited. Attendance was large, the weather fine, and all premiums were paid in full at the close of the fair.

MARSHALL.

H. F. STOUFFER, RHODES, OCTOBER 15, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The general average of crops is fair and of good quality considering the unfavorable season; work was retarded first by the late season then by wet weather, and as early frost did considerable damage.

CORN—Acreage above the average; crop about seventy-five per cent of the average; a rather poor stand in some places.

OATS—Yield light and of poor quality; in places badly damaged by rust.

WHEAT—Very little raised; yield and quality good.

RYE—Very little raised.

Barley—Acreage small but yielded well.

Flax—None.

Buckwheat—None.

Millet—But little raised.

Sorghum—Very little raised, but good.

Timothy—A good average crop and of fine quality; put up generally in good shape.

Clover—Probably below the average; much of the new seeding winter-killed; second crop not as heavy as usual.

Prairie Hay—Very little in this district.

Other Grains and Grasses—Above the normal.

Potatoes—Yield rather light; quality good.

Vegetables—Good, both in yield and quality.

Apples—Rather light yield, except early fall apples, winter apples about an average yield.

Other Fruits—Most small fruits were good, especially grapes; a very light crop of plums.

Cattle—Many pure bred cattle in this community; also a great many feeders. A fine season for pastures and cattle are in good condition.

Horses—This district is well stocked with good horses; heavy draft horses are principally bred; prices have been good and more attention is being paid to this branch of stock raising.

Swine—District well stocked with good hogs and good prices have ruled the past year; some disease among the new crop.

Sheep—Doing well and free from disease; few sheep raised but many shipped in for feeding.

Poultry—Poultry raising is extensively carried on in this section; present season has been fair for this industry, although some loss on young stock on account of wet weather.

Bees—But few kept; a poor season for honey.

Drainage—Tiling has been carried on to a large extent all over the district; the county ditch now under construction will greatly improve several hundred acres of wet lands.

Other Industries—Little attention is given to other industries than farming and stock raising; several brick and tile factories, a plant for cement fence posts, and some canning factories in the district.

Lands—Farms generally well improved and in a good state of cultivation; some farms sold for $100 to $150 per acre.

Report of Fair—Held at Rhodes, October 1 to 3; rain somewhat interferred with the attendance but exhibits were good, especially in cattle, horse and swine departments.

MILLS.

J. T. Ward, Malvern, September 25, 1907.

General Condition of Crops and Season—Season two weeks late; most crops good.

Corn—Good, average from forty to seventy bushels per acre.

Oats—Poor, from eighteen to thirty bushels per acre.

WHEAT—Good.

RYE—Yield from eighteen to thirty bushels per acre.

BARLEY—Yield about thirty bushels per acre.

FLAX—None sown.

BUCKWHEAT—But little grown.

MILLET—Very good.

SORGHUM—None raised.

TIMOTHY—Good quality and yielded from one to three tons per acre.

CLOVER—Good yield and good quality.

PRAIRIE HAY—Best in years and put up in good condition.

OTHER GRAINS AND GRASSES—Alfalfa quite good, three crops cut.

POTATOES—Yield and quality poor; price from seventy-five cents to one dollar per bushel.

VEGETABLES—Only fair.

APPLES—Very scarce and of poor quality; two to five dollars a barrel.

OTHER FRUITS—Scarce, except berries.

CATTLE—In fine condition but few in the feed yards, plenty in the pastures.

HORSES—In fine shape with most of the heavy drafters shipped out.

SWINE—Plenty of young pigs; some disease.

SHEEP—Very few raised.

POULTRY—A good supply and in good condition.

BEES—Very few raised.

DRAINAGE—Very little tiling needed.

OTHER INDUSTRIES—All branches report a good year.

LANDS—Prices range from $75 to $150 per acre.

REPORT OF FAIR—Held at Malvern, August 6 to 9; stock exhibit and races good but too early for farm products. Attendance fairly good and everyone pleased, though receipts did not quite meet the expenditures.

MITCHELL.

H. H. GABLE, OSAGE, OCTOBER 19, 1907.

GENERAL CONDITION OF CROPS AND SEASON—All crops fairly good; season unfavorable for crops in general.

CORN—Season very unfavorable, a large per cent of the corn did not mature; acreage not as large as usual; yield only fair.

OATS—Crop rather light.

WHEAT—Very little raised.

RYE—Average crop.

BARLEY—Small acreage; quality good.

FLAX—Rather light crop; acreage small.

BUCKWHEAT—Crop and yield good.

MILLET—Good crop.

SORGHUM—Not much raised.

TIMOTHY—Good crop.

CLOVER—Good average crop.

PRAIRIE HAY—Not much grown.

OTHER GRAINS AND GRASSES—Crop good.

POTATOES—A good yield and quality good.

VEGETABLES—An excellent crop.

APPLES—A fine crop, many barrels shipped to other markets.

OTHER FRUITS—Only a fair yield of small varieties.

CATTLE—In excellent condition; nearly all the farmers of the county are breeders of pure bred cattle, the Short-horn breed predominating.

HORSES—Continued activity is noted in breeding and raising horses; prices continue high.

SWINE—A steady increase in number raised; no disease reported.

SHEEP—Many raised and proving very profitable.

POULTRY—A growing industry and quite profitable.

BEES—Very few kept and did poorly the past season.

DRAINAGE—Natural conditions very good, although some tiling is being done to a very good advantage.

LANDS—A great demand for farm lands in this county by eastern farmers, with prices gradually on the increase.

REPORT OF FAIR—Held at Osage, September 17 to 20. Attendance good although the weather was somewhat unfavorable. Every department was well filled with fine exhibits and the fair was a success in every particular. The single judge system is used in the stock departments and gives satisfaction.

MONONA.

A. W. BURGESS, ONAWA, SEPTEMBER 25, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Season was dry and warm in March, dry and cold in April, no moisture until May 15th.

CORN—Fairly good yield; acreage about the same as in 1906.

OATS—Good quality; twenty to forty bushels per acre.

WHEAT—Winter wheat good, yield twenty to forty bushels; spring wheat fair quality, ten to twenty bushels.

RYE—None raised.

BARLEY—Very little raised.

FLAX—None.

BUCKWHEAT—None.

MILLET—None threshed.

SORGHUM—None.

TIMOTHY—None threshed.

CLOVER—None threshed.

PRAIRIE HAY—Yield and quality good.

POTATOES—Acreage smaller than 1906; quality good.

VEGETABLES—Good crops of nearly all kinds.

APPLES—Good yield and fairly good quality.

OTHER FRUITS—Plums and grapes plentiful.

CATTLE—About the same as 1906.

HORSES—About the same as 1906 and quality improving.

SWINE—About the same as 1906; some cholera in different parts of the county.

SHEEP—Very few raised.

POULTRY—A slight increase in the number raised.

BEES—Average crop of honey; quality good.

DRAINAGE—Our county is awakening to the importance of drainage and many ditches and cutoffs in the river are being made; big drainage canal under way.

LANDS—Prices increasing; land selling near town for $125 to $150 per acre.

REPORT OF FAIR—Held at Onawa, September 3 to 6. Fairly good weather and good attendance; more interest being displayed in the success of the fair.

MUSCATINE.

W. H. SHIPMAN, WEST LIBERTY, OCTOBER 26, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The first part of the season was backward, cold and wet and crops show the effect of it.

CORN—Shows the effect of backward season in yield and quality. Some very good corn, but low ground produced nothing.

OATS—Poor quality and light.

WHEAT—None raised.

RYE—Very little raised but of fair quality.

BARLEY—Very good crop and of a good quality.

FLAX—None raised.

BUCKWHEAT—Very little raised but of fair quality.

MILLET—Only a few scattering pieces raised.

SORGHUM—None raised.

TIMOTHY—Quality very good, but a short crop.

CLOVER—An average crop, but weather unfavorable for curing.

POTATOES—Late potatoes good. The early varieties made a short crop.

APPLES—A short crop and the quality not up to average.

CATTLE—Among the beef breeds the Short-horns predominate. The demand and better price for milk and butter is causing the farmers to become interested in dairy breeds.

HORSES—Breeders are improving the grade, by keeping better mares and securing the service of good stallions. There is a noticeable interest in the driving breeds, and the price for all kinds of horses are high.

SWINE—An average litter of pigs and no disease. Breed is being improved.

SHEEP—Better breeds are taking the place of grades.

POULTRY—The farmer's wife looks after the "Great American Hen" and the hen takes good care of the farmer's wife.

DRAINAGE—The advanced price of land has caused the farmers to lay considerable tile, and the county is expending money on county ditches.

OTHER INDUSTRIES—The condensed milk factory at this point has made a good market and good price for all the milk produced in this locality.

Report of Fair—Held at Muscatine August 17 to 20. Attendance close to a record. Our early dates and late season made the display in farm products light, but in every other department the show was good. We had an especially good show of the single drivers, and had a good list of entries in the speed department and some very good racing. We use the single expert judge in all departments and find it satisfactory.

MUSCATINE.

H. Wildasin, Wilton Junction.

General Condition of Crops and Season—Season has been too wet and backward for good crops.

Corn—About sixty per cent of a full crop.

Oats—About fifty per cent of a full crop.

Wheat—Very little grown.

Rye—About seventy-five per cent of a full crop.

Barley—About sixty per cent of a full crop.

Flax—None grown.

Buckwheat—Very little grown.

Millet—Practically none grown.

Sorghum—Fair.

Timothy—Good.

Clover—Good.

Prairie Hay—None.

Potatoes—Fifty per cent of a full crop.

Vegetables—Fair.

Apples—Very small yield.

Swine—Large number of spring pigs.

Poultry—More poultry raised this year than usual.

Report of Fair—Held at Wilton Junction, September 17 to 19.

O'BRIEN.

Ray R. Crum, Sutherland, October 7, 1907.

General Condition of Crops and Season—The acreage of corn and oats is greater, but on account of the backward season the yield will not be as great as that of 1906. Farmers are doing considerable fall plowing.

Corn—Acreage large, but yield will fall short of that for 1906. Quality is good and will average about forty to sixty bushels per acre.

Oats—Large acreage, light in weight and will average about thirty bushels per acre.

Wheat—No winter wheat raised. Small acreage but good yield of spring wheat.

Rye—None raised.

Barley—Fair yield, but small acreage.

Flax—None raised.

BUCKWHEAT—Practically none raised.

MILLET—Small amount produced, but of good quality.

SORGHUM—None raised.

TIMOTHY—Very good quality and an average yield.

CLOVER—Fair crop, not well filled out.

PRAIRIE HAY—Good yield and good quality.

OTHER GRAINS AND GRASSES—The pasturage was good for summer and fall, but backward in the spring.

POTATOES—Good quality and good yield.

VEGETABLES—Plentiful.

APPLES—The quality is not up to standard, but every mature orchard seems to be well filled.

OTHER FRUITS—Strawberries, blackberries, raspberries, grapes, pears and peaches were very light yield.

CATTLE—There will be a large number of cattle fed this year.

HORSES—Are not so plentiful and are high in price.

SWINE—Cholera is depleting the herds and shoats are high priced.

SHEEP—Are quite plentiful and the better breeds are much in evidence.

POULTRY—Plentiful and some very fine flocks.

BEES—Not many in this county.

DRAINAGE—Well tiled out.

LANDS—Price ranges from $65 to $135 per acre, rents from $3 to $5 per acre.

REPORT OF FAIR—Held at Sutherland, September 3 to 6. Good exhibits and a success as a fair.

OBRIEN.

JOE MORTON, SHELDON, SEPTEMBER 28, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The general condition of crops is below the average, about seventy-five per cent of a usual crop. The season was cold, wet and backward.

CORN—Fair quality, and about seventy-five per cent of an average crop.

OATS—Poor quality, and about sixty per cent of a full crop.

WHEAT—Poor quality, and forty per cent of the usual crop.

RYE—None raised.

BARLEY—Fair quality, and about sixty per cent of full crop.

FLAX—Average crop and of a good quality.

BUCKWHEAT—None raised.

MILLET—Average crop and good quality.

SORGHUM—None raised.

TIMOTHY—Average crop and of good quality.

CLOVER—Average crop and a fair quality.

PRAIRIE HAY—Average crop.

POTATOES—Good crop and good quality.

VEGETABLES—Good.

APPLES—Good quality and a big crop.

OTHER FRUITS—Small fruit very poor crop.

CATTLE—Usual number raised in the county.

HORSES—Increase in number of horses.

SWINE—Large increase in number of swine.

POULTRY—General increase.

BEES—Have done well, good yield of honey.

DRAINAGE—Considerable tileing and ditching done the past year.

LANDS—Value increased, average price $75.00 per acre.

REPORT OF FAIR—Held at Sheldon, August 2-9. Large attendance, good exhibits and attractions, races were well filled and were enjoyed by the people.

PAGE.

J. C. BECKNER, CLARINDA, OCTOBER 15, 1907.

CORN—Fair.

OATS—Very poor.

WHEAT—Average crop.

RYE—Average crop.

BARLEY—Average crop.

FLAX—None raised.

TIMOTHY—Fair yield.

PRAIRIE HAY—Good yield.

POTATOES—Poor.

VEGETABLES—Fair.

APPLES—Poor yield.

OTHER FRUITS—Strawberries, raspberries and blackberries average crop.

CATTLE—Average number of cattle in the county.

HORSES—There seems to be a few more colts than usual.

SWINE—Average number of swine.

SHEEP—About the usual number.

POULTRY—About the same in this vicinity.

PAGE.

A. W. GOLDBERG, SHENANDOAH, OCTOBER 17, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Good in every respect excepting light oats.

CORN—Very good.

OATS—Light.

WHEAT—Above average.

RYE—Good.

Barley—Not much raised.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—None raised.

Timothy—Light yield.

Clover—Fair yield.

Prairie Hay—Not much to cut in this county.

Potatoes—Medium yield and a good quality.

Vegetables—Fairly good.

Apples—Poor.

Other Fruits—Poor.

Cattle—Good supply and high priced.

Horses—High priced.

Swine—Average number.

Sheep—Not many in the county.

Poultry—Extra good.

Bees—Fairly good.

Drainage—Well drained out.

Lands—High priced, and gradually on the raise.

Report of Fair—Held at Shenandoah, August 12-16. Large attendance. Program carried out to the letter and everybody felt gratified with the result. Voted extension of charter for twenty years.

PALO ALTO.

F. H. Wells, Emmetsburg, October 22, 1907.

General Condition of Crops and Season—The dry warm weather in the early spring put the land in such shape that it could be cultivated and crops put in. May and June were cold and wet, damaging corn, small grain and fruit. September and October have been dry and corn ripened nicely. Small grains of all kinds are of light weight and will average about sixty per cent of a full crop. Corn will average little over one-half a crop and the quality varies according to drainage, etc.

Corn—Wet weather during cultivating season done great damage to the corn crop. Figuring total acreage planted it will average little better than fifty per cent of a full crop.

Oats—Will average about 26 pounds per bushel and the yield was from twenty to forty bushels per acre.

Wheat—Very little raised, yield about fourteen bushels per acre.

Rye—Very little raised.

Barley—Barley was the best small grain crop this year, yielding from thirty to forty bushels per acre. The quality good, but badly colored.

Flax—Not much raised.

Buckwheat—None raised.

MILLET—On high ground very good, but on low ground in most cases a total failure.

SORGHUM—None raised.

TIMOTHY—Good quality averaging from one and one-half to two and one-half tons per acre. Well cured and very little rained on.

CLOVER—Old clover is good crop, but new seeding very light.

PRAIRIE HAY—Good yield and nearly all cut in season to make good salable hay.

POTATOES—Potatoes are yielding fairly well, but are rotting on account of wet weather. Most of the potatoes are free from scab and the later varieties are nearly all sound.

VEGETABLES—Large crop and good quality.

APPLES—The apple crop is large. Wealthy, Snow, Plumb Cider and Hass of large size and well colored. Walbridge and Famouse small and pale.

OTHER FRUITS—Plumbs were a failure on account of frost. Raspberries a small crop, and gooseberries about an average crop.

CATTLE—We have many herds that are headed by prize takers and individual animals that are good enough to be shown at the large shows.

HORSES—At least six car loads of draft horses varying in price from $125 to $200 each have been shipped out of this county.

SWINE—Chester White, Duroc Jersey and Poland China are the leaders among our farmers. Our farmers are dipping their hogs which proves to be successful method of keeping out cholera.

SHEEP—This branch of stock raising is in its infancy in this county.

POULTRY—Much money is lost by neglecting the poultry.

BEES—None kept.

DRAINAGE—This county has twenty-three drainage districts established or in the course of establishment, and large tracts of land otherwise unproductive are being made ready for cultivation.

LANDS—Are selling quite readily at prices ranging from $45.00 to $80 per acre.

REPORT OF FAIR—Held at Emmetsburg, September 17-20. Attendance was good, and the exhibits of horses, cattle, swine and agricultural products were the best in the history of our fair.

POCAHONTAS.

JOHN FORBES, FONDA, OCTOBER 18, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Below the average of former years.

CORN—The yield will not be as large as last season, will average about thirty-five bushels per acre.

OATS—Quality very poor, about half a crop.

WHEAT—Not much raised in this county.

RYE—Yield good, but very little raised.

BARLEY—Good quality and fair yield.

FLAX—Very little raised.

BUCKWHEAT—Small acreage, but good yield.

MILLET—Good.

SORGHUM—Good.

TIMOTHY—Fair yield.

CLOVER—Fair crop.

PRAIRIE HAY—Lighter crop than last season.

POTATOES—Yield about an average, good quality.

VEGETABLES—Good.

APPLES—The largest and best crop ever raised in the county.

OTHER FRUITS—Good crop.

CATTLE—Are doing well and in good condition for winter. Very few on feed.

HORSES—Command a good price, and are scarce.

SWINE—About the usual number raised, some dying with cholera.

SHEEP—Increased number and doing well.

POULTRY—Great many raised and doing well.

BEES—Good.

DRAINAGE—More tiling and ditching has been done this season than ever before.

LANDS—Advancing .in price and a great many sales reported.

REPORT OF FAIR—Held at Fonda, August 6-9. Weather very threatening first two days, but on a whole a larger attendance than for many years.

POTTAWATTAMIE.

CALEB SMITH, AVOCA, OCTOBER , 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops were about an average with former years. Dry weather during June and July retarded the growth of young clover, grass and pasture. Favorable season for harvesting hay.

CORN—About an average crop. Considerable replanting being done and a thin stand.

OATS—An average yield, but of light weight.

WHEAT—Both winter and spring wheat raised, but average not up to former years.

RYE—Very little raised.

BARLEY—Good quality but very little raised.

FLAX—None raised.

BUCKWHEAT—None raised.

SORGHUM—None raised.

TIMOTHY—Light yield, but of good quality.

CLOVER—Yield medium, but of good quality.

PRAIRIE HAY—Average yield, quality good.

POTATOES—On account of dry weather the yield was light, but quality was good.

VEGETABLES—Season was a little too dry, but of good quality.

APPLES—Early varieties yielded a good crop, but the late ones hardly enough for home consumption.

OTHER FRUITS—Cherries, plums, blackberries and strawberries were plentiful and of good quality. Some peaches grown.

CATTLE—Receive a great deal attention and a majority of the stock raisers have a pure bred at the head of their herd. Dairying is carried on extensively in this vicinity.

HORSES—Command a good price and have done well. More interest is being paid to the care and breeding of horses than formerly.

SHEEP—Very few raised, but more interest taken in them than in the past.

POULTRY—A growing industry, carried on mostly by the farmer's wives and daughters.

LANDS—Advancing in price. Good land two to four miles **from town** selling at $125 to $130 per acre.

REPORT OF FAIR—Held at Avoca, September 10-13. The gate receipts show a larger attendance than any other meeting in the history of the Association. The stock exhibits were better than usual and exhibitors and horsemen were well pleased with the treatment they received.

POWESHISK.

JAMES NOWAK, MALCOM, OCTOBER 28, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The season was very late and backward, fruits of all kinds were killed by late frosts.

CORN—Planting was late and the acreage less than usual on account of the wet weather. Owing to early frosts some corn will be soft. Yield thirty-two and a half bushels per acre.

OATS—Yield light, quality poor; price high.

WHEAT—Medium crop of fair quality. Price $1.00 per bushel.

RYE—Very good fair crop; good price.

BARLEY—Fair in quality, yield and price.

FLAX—Very little raised.

BUCKWHEAT—Fairly good.

MILLET—Very good.

SORGHUM—Fair crop, good quality.

TIMOTHY—Fair crop and good price.

CLOVER—Good crop and good prices.

PRAIRIE HAY—Fair crop and good quality; price very good.

OTHER GRAINS AND GRASSES—Pastures have been excellent since the middle of August; plenty of rain.

POTATOES—Very good yield; good quality. Price seventy-five cents per bushel.

VEGETABLES—Very scarce on account of late spring.

APPLES—Very light crop and quality not first class; prices high.

OTHER FRUITS—Light yield.

CATTLE—Have done well. Supply about normal. Prices high.

HORSES—Prices higher than last year. Good horses command quick sale and high prices.

SWINE—Have not done as well as last year. Some cholera reported since September 15th. Prices high.

SHEEP—Have had a good year; prices good.

POULTRY—Poultry higher in price than ever before; eggs high in price all season.

BEES—Light crop of honey.

DRAINAGE—Much tiling being laid every year. The new road law is a success where put in operation.

LANDS—Good farms are selling at from $100 to $140 per acre.

REPORT OF FAIR—Held at Malcolm, August 20-22. The weather was fine but the attendance was somewhat diminshed owing to the farmers being engaged in threshing. Exhibits in general were good; racing was excellent and the people were satisfied with the management of the fair. A fine new swine barn was erected during the past season at a cost of several hundred dollars.

POWESHIEK.

I. S. BAILEY, JR., GRINNELL, SEPTEMBER 23, 1908.

GENERAL CONDITION OF CROPS AND SEASON—Condition of crops fair; season was backward and a large amount of rainfall during the summer months.

CORN—About two-thirds of a crop. Not all out of danger of frosts at this writing; about two weeks needed to ripen it properly.

OATS—Very poor crop; light in weight, yielding from ten to thirty bushels per acre.

WHEAT—Very poor crop of wheat; yield about ten to fifteen bushels per acre.

RYE—Very fair crop of rye.

BARLEY—Fair crop.

FLAX—None raised.

BUCKWHEAT—Very little raised; fair crop.

MILLET—Good crop.

SORGHUM—Good crop, but very little raised.

TIMOTHY—Good crop and put up in good condition.

CLOVER—Good, and put up in good condition.

PRAIRIE HAY—None raised.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Good; not as large acreage as usual.

VEGETABLES—Good.

APPLES—Very poor crop.

OTHER FRUITS—Very poor.

CATTLE—Fine condition; pastures have been excellent throughout the season.

HORSES—In fine condition.

SWINE—Good condition; not as many on hand as at this time a year ago.

SHEEP—Good condition small flocks.

POULTRY—In good condition, many raised and prices high.

BEES—In good condition and a large amount of honey secured this season.

DRAINAGE—Large amount of tile being used each year, bringing into cultivation many hundreds of acres of our best land.

OTHER INDUSTRIES—Manufacturing industries increasing from year to year.

LANDS—Selling from $90 to $228.50 per acre.

REPORT OF FAIR—Held at Grinnell, September 3-5, 1907. Weather good and attendance large; exhibits larger than ever before.

SAC.

ED WELCH, JR., SAC CITY, SEPTEMBER 27, 1907.

CORN—Fair.

OATS—Light.

WHEAT—Fair.

RYE—Light.

BARLEY—Light.

FLAX—None raised.

BUCKWHEAT—Fair.

MILLET—Good.

SORGHUM—Fair.

TIMOTHY—Light.

CLOVER—Light.

PRAIRIE HAY—Fair.

POTATOES—Fair.

VEGETABLES—Quite good.

APPLES—Average crop.

OTHER FRUITS—Light yield.

CATTLE—Generally in good condition; quite a number have died with "Black Leg"; vaccination has checked the disease in most of the herds.

HORSES—Good condition.

SWINE—Considerable sickness among the swine in this locality, caused by worms and kidney trouble.

SHEEP—Good.

POULTRY—Good.

BEES—Good.

DRAINAGE—Considerable tiling and drainage work done past season.

OTHER INDUSTRIES—Canning factory at this point canned 1,250,000 cans of corn. Cement tile factory furnish a large number of drain tile and a fine durable stone.

REPORT OF FAIR—Held at Sac City, August 13-16.

SHELBY.

W. E. COOPER, HARLAN, OCTOBER 14, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Somewhat below the average. The early spring was dry and cold retarding the growth of all kinds of crops.

Corn—A fair stand with about the usual acreage. Good quality, with but few fields injured by the frost. Yield a little below that of last year.

Oats—Below the average both in quality and quantity. Early oats almost a failure, and late oats about two-thirds of a crop.

Wheat—Fair quality. About the usual acreage and yield.

Rye—Not much sown except for hog pasture.

Barley—About the usual yield and of good quality. Acreage not up to former years.

Flax—Not much sown.

Buckwheat—Good yield but very little sown.

Millet—Small acreage.

Sorghum—Small amount raised average quality.

Timothy—About one-half crop, but of good quality.

Clover—The crop for hay was good, but not much cut for seed.

Potatoes—Good quality, about one-half crop, and price double from last year.

Vegetables—All an average crop.

Apples—Yield below the average, but of good quality.

Other Fruits—Light crop.

Cattle—Not as many steers on feed as usual. Our farmers have some very fine herds of pure bred cattle, some of which are the finest in the state.

Horses—High prices for horses has stimulated the breeders to raise more colts than in former years. All standard breeds are represented. Buyers are busy picking up horses for the eastern market.

Swine—The number of spring pigs a little below the average. Not much disease among the hogs in this county.

Sheep—Very few in the county.

Poultry—Plentiful and high priced.

Bees—Not many in the county.

Drainage—Good.

Other Industries—Brick plant, gas engine factory, loom factory, rug factory and canning factory located at the county seat furnish employment for about one hundred men.

Lands—Advancing in price, market value fully $10 per acre more than last year.

Report of Fair—Held at Harlan, September 17-20. Attendance largest in history of the association. The fair was a success in every particular, largest and best exhibit of stock and the fastest field of horses ever on the grounds.

SIOUX.

H. Slikkerveer, Orange City, October 17, 1907.

General Condition of Crops and Season—Crops below the average. The early spring was dry and then it came on wet and cold and done considerable damage to corn and other crops.

Corn—Will yield from thirty to forty bushels per acre.

Oats—Very light in weight, will yield from twenty to forty bushels per acre.

Wheat—Will average about twelve bushels per acre.

Rye—None raised in this locality this year.

Barley—Will yield from twenty-eight to thirty bushels per acre.

Flax—None raised.

Buckwheat—None grown.

Millet—Average crop.

Sorghum—Small acreage, but yielded a good crop.

Timothy—Above the average crop.

Clover—Above the average crop.

Prairie Hay—Very little to cut except low land hay.

Other Grains and Grasses—Good.

Potatoes—Below the average.

Vegetables—Very good.

Apples—Poor quality and about sixty per cent of a full crop.

Other Fruits—Below the average.

Cattle—In good condition.

Horses—Have done well.

Swine—Number of pigs a little below the average and some cholera in different localities.

Sheep—Have done well and are in good condition.

Poultry—Have done fairly well this year.

Bees—Have not done as well as usual, not very much honey.

Drainage—Natural condition, and nature of soil are such that do not require much drainage.

Other Industries—Dairy farming and gardening have been profitable the past season.

Lands—Good demand for land, and price ranges from $85 to $100 per acre.

Report of Fair—Held at Orange City, September 18-20. The attendance was the largest in the history of our society. All the exhibits were good with the exception of the cattle exhibit which was not quite up to the average. The last day of the fair was designated as "Holden Day" and Prof. Holden of Ames delivered one of his splendid lectures on corn which was instructive and pleasing to our farmers. Racing and other attractions were good and all those in attendance were well pleased with the fair. We allow no gambling or games of chance of any kind on the grounds.

STORY.

F. H. Greenawalt, Nevada, October 23, 1907.

Condition of Crops and Season—The season has been favorable, although not a banner year. We will have a fine crop.

Corn—Average number of acres planted. Inclined to be soft, but will mature fairly well. Will yield about forty-five to fifty bushels per acre

Oats—Usual acreage. Will yield about twenty-five bushels per acre, but are light in weight.

WHEAT—Very little raised. Small acreage of winter wheat and went as high as forty bushels to the acre.

RYE—Small acreage, but will yield well.

BARLEY—None raised.

BUCKWHEAT—None raised.

MILLET—Only small patches raised.

SORGHUM—Small acreage raised.

TIMOTHY—Small acreage.

CLOVER—Good crop.

PRAIRIE HAY—Good crop, but less of it to cut each year.

POTATOES—Not as good as usual, will yield about one hundred to one hundred and twenty-five bushels per acre.

VEGETABLES—Good crop.

APPLES—Good crop.

OTHER FRUITS—Short crop.

CATTLE—An exceptionally fine lot of well bred cattle raised this year.

HORSES—There is a large number of good horses in the county.

SWINE—We have lost about one-half of our hogs from cholera.

SHEEP—Have done well.

POULTRY—A greater number of chickens are being raised each year. Many farmers raise from 500 to 1,000 and a few as many as 2,000 each year.

BEES—Did not do well.

DRAINAGE—The county is becoming thoroughly tiled, and several large open ditches have been put in during the past few years.

LANDS—Increasing in value. Sales run from $100 to $137 per acre.

REPORT OF FAIR—Held at Nevada, September 24-27. Good attendance. We had a good fair and it was a financial success. We run a purely agricultural fair, no races.

TAMA.

A. G. SMITH, TOLEDO, OCTOBER , 1907.

GENERAL CONDITION OF CROPS AND SEASON—On account of the cold wet weather during May and June the wheat and barley crops are the only ones that made creditable showing.

CORN—Larger acreage planted than last year, but on account of so much being drowned out on low and wet lands the acreage to be harvested will be about the same as last season. Cold weather and rain during the months of May and June made a poor stand and will reduce the yield to about forty-five bushels per acre.

OATS—Damaged by hot weather and rain during time they were ripening. Will average about twenty bushels per acre.

WHEAT—Not a general crop in this locality. Spring wheat averaged about fifteen bushels per acre and was of good quality; winter not as good quality and averaged about twenty bushels.

BARLEY—About the usual acreage and yield about twenty-five bushels per acre. Slightly colored and weighed about forty-three pounds to the bushel.

Flax—Practically none raised in the county.

Buckwheat—But little raised in this section.

Millet—Only a few patches and a general thing they were caught by the frost.

Sorghum—Very little grown.

Timothy—Good yield and of a good quality.

Clover—Old clover badly winter killed, but yielded well where not killed. 1907 seeding good stand.

Prairie Hay—Practically none in the county.

Potatoes—Generally good quality but inferior yield. Selling for double the price they brought last season.

Vegetables—Fair yield; damaged some by hail during month of July. Tomatoes were slow to ripen.

Apples—Almost a failure, but bring good price.

Other Fruits—Small yield. Few plums or cherries. Early grapes ripened evenly, but the later ones were damaged by hail and ripened uneven.

Cattle—In good condition and are bringing good prices.

Horses—In good condition, and a large number of colts were raised. Good prices are being paid for all grades.

Swine—No epidemic. Not quite the usual number of pigs raised. Prices good.

Sheep—Gradual increase in number and of a good breed.

Poultry—Heavy rains during the months of May and June were fatal to about thirty-five per cent of chickens hatched. Eggs brought a good price all the season.

Bees—Have not produced the usual amount of honey.

Drainage—A large amount of tile has been laid during the past season.

Other Industries—The usual amount of corn cannned and about two-thirds the usual amount of tomatoes.

Lands—Show an increase of ten or fifteen per cent in value.

Report of Fair—Held at Toledo, September 24-27. Fair entries in horse, cattle, swine, sheep and poultry departments. Creditable exhibits in all other departments. Receipts were about equal to expenses. If the rain had held off that drove the crowd away the last days of the fair we would have had a nice balance in the treasury to make some much needed improvements.

TAYLOR.

F. N. Lewis, Bedford, September 14, 1907.

General Condition of Crops and Season—Very backward.

Corn—About two-thirds of a full crop and late in maturing.

Oats—Light weight and about one-half a crop.

Wheat—Good average crop for this locality.

Rye—An average crop.

Barley—Very little raised.

Flax—None raised.

Buckwheat—None raised.

Millet—Good crop.

Sorghum—Good crop.

Timothy—Fair crop.

Prairie Hay—Not much to cut in this locality.

Potatoes—About one-half crop.

Vegetables—Good average crop.

Apples—Very poor crop.

Other Fruits—About one-fourth crop.

Cattle—Number and condition compares favorably with former years.

Horses—Good breeds are being raised and command good prices.

Swine—Very good.

Sheep—Very good.

Poultry—Extra good.

Bees—About the average amount of honey produced.

Drainage—Poor.

Lands—Gradually increasing in value.

Report of Fair—Held at Bedford, September 3-6. Good attendance, good exhibits and a success financially.

UNION.

J. M. McCornack, Creston, October 2, 1907.

General Condition of Crops and Season—All crops will fall slightly below an average crop. Dry weather early in the season cut the hay crop short and retarded the growth of all crops.

Corn—Little more than an average acreage, and it is estimated that it will be an average yield. Quality is good.

Oats—The yield is not quite up to the average.

Wheat—Slight increase in acreage and a fair yield.

Rye—Fair yield on acreage sown, but not much raised in this county.

Barley—None raised.

Flax—None raised.

Buckwheat—A fair yield on the small patches that were sown.

Millet—The yield is above the average, but very little sown.

Sorghum—Good yield, but very little grown.

Timothy—Late rains this season resulted in a light crop, although the quality is good.

Clover—An excellent crop of fall clover, although little of it was cut for seed.

Prairie Hay—None.

Other Grains and Grasses—Some attention is being paid to alfalfa, but it has not been tried long enough to determine whether it will be a profitable crop.

Potatoes—Good quality and a little above the average yield.

Vegetables—An excellent crop of all kinds of vegetables.

Apples—Almost an entire failure on account of frost.

OTHER FRUITS—Large amount of small fruit grown.

CATTLE—Number slightly below an average. In excellent condition and much attention is being paid to the breeding of better cattle in this section.

HORSES—There is an increase in the number of foals and horses in the county, and a great many are being shipped to the eastern markets at very good prices. Attention is being paid to better breeds of draft horses.

SWINE—Attention is being paid to better breeds of swine. Number of swine in the county is slightly below the average.

SHEEP—Large number are being shipped in for feeding purposes, and a greater number are being raised locally than in past years.

POULTRY—Largely on the increase with good results to the producer and greater profits for the money invested than any other product from the farm.

BEES—But little attention is being paid to the bee industry.

DRAINAGE—More tiling is being done than in any one season in the past.

OTHER INDUSTRIES—Dairying is largely on the increase.

LANDS—During the past year there has been a good demand for lands and the price has made a steady increase.

REPORT OF FAIR—Held at Creston, August 20-23. Attendance very light. Good live stock exhibit, but lack of interest shown by the farmers in the agricultural exhibits.

VAN BUREN.

D. A. MILLER, MILTON, OCTOBER 1, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Good.

CORN—Fine crop excepting low lands.

OATS—More than average yield.

WHEAT—Above average.

RYE—An excellent crop.

BARLEY—Not much grown.

FLAX—Not much grown.

BUCKWHEAT—Fair crop.

MILLET—Excellent yield.

SORGHUM—Good.

TIMOTHY—About one-half crop.

CLOVER—Below average.

PRAIRIE HAY—Good crop.

POTATOES—About one-half crop.

VEGETABLES—Good.

APPLES—Almost a failure.

OTHER FRUITS—Almost a failure excepting small fruits which were good.

CATTLE—Up to the average number and condition.

HORSES—Good condition and usual number.

SWINE—Good.

SHEEP—Good.

POULTRY—More raised each season.

DRAINAGE—Excellent.

LANDS—All advancing in value.

REPORT OF FAIR—Held at Milton, September 17-20. One of the most successful fairs ever held by association.

WAPELLO.

H. R. BAKER, ELDON, OCTOBER 10, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Season very unfavorable during spring months on account of cold wet weather; later part of season more favorable and crops are good.

CORN—Large acreage and the indications are that it will yield from thirty to sixty bushels per acre.

OATS—Fair yield and good prices.

WHEAT—Small acreage, but yield and quality good.

RYE—Very little raised; yield and quality good.

BARLEY—Very little raised.

FLAX—None raised.

BUCKWHEAT—Very little grown.

MILLET—What little there was sown made a good crop.

SORGHUM—Small amount sown for feed and yielded well.

TIMOTHY—Good crop, but weather was unfavorable about harvest time and considerable of it damaged.

CLOVER—Good crop. Splendid second growth although there was not much cut for seed.

PRAIRIE HAY—Very little to cut in this locality.

OTHER GRAINS AND GRASSES—Some are experimenting with alfalfa and it is doing well.

POTATOES—Fair crop and of good quality.

VEGETABLES—Very good crop.

APPLES—Scarce and high in price.

OTHER FRUITS—Very little raised on account of late frosts during the spring.

CATTLE—Are in better than average condition on account of excellent fall pasture. Also a noticable improvement in breeding.

HORSES—In good condition, and good animals command a good price.

SWINE—Large number raised and are in a healthy condition.

SHEEP—Not many raised in this locality.

BEES—Poor season for the production of honey.

POULTRY—Raised quite extensively and there is a noticable improvement in breeding.

DRAINAGE—More than the usual amount of tile laid during the past season.

LANDS—Price ranges from $40 to $125 per acre.

REPORT OF FAIR—Held at Eldon, September 4-6. Attendance not quite up to average.

WARREN.

LEE TALBOTT, INDIANOLA, SEPTEMBER 23, 1907.

GENERAL CONDITION OF CROPS AND SEASON—The season has been a fairly favorable one, and all crops will be up to the average.

CORN—A very good crop.

OATS—Fair crop. Early varieties light in weight. Late oats much best crop this year.

WHEAT—A very good crop of both winter and spring wheat.

RYE—Small acreage, but good yield and quality.

BARLEY—Very little grown.

FLAX—None raised.

BUCKWHEAT—None grown.

MILLET—None raised.

SORGHUM—Very little grown.

TIMOTHY—Good yield and was put up in good condition.

CLOVER—First cutting not put up in good condition. Second crop good.

PRAIRIE HAY—Small acreage, but quality good.

POTATOES—Early potatoes good, late crop light.

VEGETABLES—All varieties yielded well.

APPLES—A very light yield and of poor quality.

OTHER FRUITS—Cherries and plums almost a failure, other small fruits a good crop.

CATTLE—Farms are well stocked with good breeds of cattle. The pasturage has been good all season and cattle have done exceptionally well.

HORSES—Large number of the heavy draft breeds raised in this county and shipped to the eastern markets.

SWINE—Usual number in the county and are free from disease.

SHEEP—A few are raised in the county and seem to be doing well.

POULTRY—Raised in large numbers by all classes of farmers.

BEES—Only a few kept. Have done well this season.

DRAINAGE—Farms are as a general thing well drained.

LANDS—Selling from $60 to $125 per acre.

REPORT OF FAIR—Held at Indianola, September 3-6. Good attendance. All departments were well filled with exhibits.

WAYNE.

EDD ATEN, HUMESTON, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Season was backward in the early spring, but all crops are up to the average.

CORN—Yield and quality was very good excepting a few fields that were replanted in June. Some fields yielded seventy-five bushels per acre.

OATS—Early oats made the best crop and would weigh out. Average yield from twenty to forty bushels per acre.

WHEAT—Not raised to any great extent. Twenty bushels per acre consdered a good crop.

RYE—Small acreage, but yielded a very good crop.

BARLEY—Very little raised.

FLAX—None raised.

BUCKWHEAT—Very good, but not much raised.

MILLET—Only small patches, but yielded a good crop.

SORGHUM—Not much raised.

TIMOTHY—Good yield and was put up under favorable conditions.

CLOVER—Farmers begin to realize the value of clover. Acreage small, but yielded well.

PRAIRIE HAY—Most of the land is under cultivation consequently not much to cut.

OTHER GRAINS AND GRASSES—Excellent crop of blue grass.

POTATOES—About an average crop, and are selling at seventy-five cents per bushel.

VEGETABLES—Good.

APPLES—Fair crop. Plenty of winter apples.

OTHER FRUITS—Fair crop. Good yield of grapes.

CATTLE—Large number of young cattle raised past year. In good condition and is our principal industry.

HORSES—Large number raised for the eastern markets and nearly all from well bred stallions.

SWINE—Large number of the good breeds raised, and are free from disease.

SHEEP—More interest shown in raising sheep, and they have done well the past season.

POULTRY—Have yielded a better profit on the amount of money invested than any product on the farm.

BEES—Have done fairly well.

DRAINAGE—Not much needed in this locality.

LANDS—Command good prices and are steadily increasing in value.

WINNEBAGO.

J. A. PETERS, FOREST CITY, OCTOBER 19, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Some very wet periods, and the temperature was considerable below the normal every month during the growing season. All crops will be just about up to the average.

CORN—More attention is being paid to breeding up seed corn. Will average about thirty-five bushels per acre.

OATS—Light in weight and yield, run about twenty-five bushels per acre.

WHEAT—Good quality, but very little raised.

RYE—Not much raised.

BARLEY—Exceptionally good quality and fair yield.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Small acreage, but good yield.

SORGHUM—Very little raised except for fodder which yielded well.

TIMOTHY—Yielded about two tons per acre, and about five bushels of seed per acre.

CLOVER—None raised for seed. Hay crop good.

PRAIRIE HAY—Yielded two tons per acre and of fine quality.

POTATOES—Average yield and bring a good price.

VEGETABLES—An average yield.

APPLES—About 10,000 bushels were marketed this season. Wealthy, Hibernal, Northwest Greenings, Patons Greenings and Longfield principal varieties.

OTHER FRUITS—Small fruits and berries were an average crop.

CATTLE—Herds show more attention is being paid to breeding.

HORSES—Are in great demand and our farmers are raising a great many colts.

SWINE—Principal breeds are Poland China, Berkshire and Duroc Jerseys.

SHEEP—Only a few are raised in this locality.

POULTRY—A greater interest is being taken in full bloods.

BEES—Only a few aparies. Poor season for bees.

DRAINAGE—Many large county ditches are being put in and a large number of tile are being laid.

LANDS—Taking value of land into consideration, the prices paid for land in this county are lower than in any of the surrounding counties.

REPORT OF FAIR— Held at Forest City, October 1 to 3. Rain on entry day kept away several exhibitors, but nevertheless the exhibits were the finest we ever had. We will be able to pay out in full without leaving much, if any, deficit.

WINNEBAGO.

J. P. BOYD, BUFFALO CENTER, OCTOBER 15, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Taken as a whole the season was quite a favorable one.

CORN—Sixty-five per cent of average crop, with fifty per cent matured before frost.

OATS—About sixty-five per cent of of an average crop, testing from twenty to thirty pounds.

WHEAT—About eighty-five per cent of an average crop.

RYE—Practically none grown.

BARLEY—Very little grown though an average crop.

FLAX—Small acreage with an average crop.

BUCKWHEAT—Very little raised.

MILLET—Small acreage but the yield was heavy.

SORGHUM—Practically none raised.

TIMOTHY—Average crop of hay and fully as good as last year, about half the amount cut for seed as last year.

CLOVER—Average crop cut for hay, practically none cut for seed.

Prairie Hay— Exceptionally good.

Potatoes—Yield per acre very large and of good quality.

Vegetables—All kinds did exceptionally well.

Apples—Yielded a large crop although very few are raised in this part of the county.

Cattle—Number raised is increasing each year, noticable improvement in the breeding.

Horses—Have done well; better grades are being raised each year.

Swine—A big increase in swine raising with improvement in the grade of stock.

Sheep—Very few here but of good breeding.

Poultry—All grades raised extensively.

Bees—Honey crop good but the industry is not engaged in extensively.

Drainage—A great interest is being taken in drainage and several county drainage districts have been established.

Lands—While we have as good land as can be found for agricultural purposes; the price is very cheap considering other localities.

Report of Fair—Held at Buffalo Center, September 24 to 26. Exhibits and races were good. The attendance was good and the fair was a success financially the first time for several years.

WINNESHIEK.

E. A. Waterbury, Decorah, September 30, 1907.

General Condition of Crops and Season—Crops generally fair; season cold, wet and backward.

Corn—About two-thirds of an average crop; some not matured yet.

Oats—About half a crop and light weight.

Wheat—Very little raised.

Rye—Only raised for feed.

Barley—Fair crop; average yield and fine quality.

Flax—Good crop and good quality.

Buckwheat—None raised.

Millet—None raised.

Sorghum—None raised.

Timothy—Fair crop and fine quality.

Clover—Not a successful crop, winter killed.

Other Grains and Grasses—Fair crop.

Potatoes—Good yield but considerable complaint of rot.

Vegetables—Good yield and fine quality.

Apples—Big crop of summer apples; winter apples a fair crop and fair quality.

Other Fruits—Good crop, fair quality.

Cattle—Fine condition; prices high.

Horses—Scarce; market twenty-five per cent higher than one year ago.

Swine—No disease reported; prices range from $5.00 to $5.75.

Sheep—Not many raised; condition good; prices high.

Poultry—Plenty of poultry and in fine condition; prices high.

BEES—Honey scarce and high.

DRAINAGE—County very rough and thoroughly drained naturally.

OTHER INDUSTRIES—Everything prosperous; no failures.

LANDS—Prices range from$50 to $80 per acre.

REPORT OF FAIR—Held at Decorah,September 10 to 13. Fine weather; good attendance; most successful fair in years. All premiums and expenses paid in full and surplus left.

WORTH.

E. H. MILLER, NORTHWOOD, OCTOBER 3, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Crops medium; season wet and cold.

CORN—Poor and damaged by frost.

OATS—Light in yield and weight.

WHEAT—Not much raised but good quality.

RYE—Very little raised.

BARLEY—Fair yield but poor quality.

FLAX—Medium crop.

BUCKWHEAT—Injured by frost.

MILLET—Good crop.

SORGHUM—None.

TIMOTHY—Medium crop.

CLOVER—Only average.

PRAIRIE HAY—Only medium.

POTATOES—Yielded fairly well but are rotting.

VEGETABLES—Good.

APPLES—Good in quality and quantity.

CATTLE—Average number; quality improving.

HORSES—Scarce and high.

SWINE—Good; average number.

SHEEP—Not many raised.

POULTRY—Plentiful.

BEES—Have done poorly.

DRAINAGE—Farmers are just beginning to tile and much will be done next year.

LANDS—Not advancing but holding their own.

REPORT OF FAIR—Held at Northwood, September 23 to 25. Weather somewhat unfavorable for good attendance. Hope to pay all premiums.

WRIGHT.

O. P. MORTON, CLARION, OCTOBER 1, 1907.

GENERAL CONDITION OF CROPS AND SEASON—Spring was cold and dry and vegetation was very late; heavy rains and destructive hailstorms in July and killing frost September 25th.

Corn—Fields weedy and crop late; not over eighty-per cent matured at time of frost; about sixty per cent of a full crop.

Oats—Averaged twenty-five bushels per acre and tested twenty-seven pounds.

Wheat—Yielded thirteen bushels per acre of No. 3 grade.

Rye—Very little raised.

Barley—Yielded twenty-four bushels per acre .

Flax—Very little raised.

Buckwheat—Very little raised.

Millet—Little raised.

Sorghum—Little raised.

Timothy—Seventy-five per cent of crop.

Clover—Good full crop but owing to frequent rains was put up in poor condition.

Prairie Hay—Eighty-five per cent of full crop, good quality.

Potatoes—Will make eighty per cent of a full crop.

Vegetables—Fairly good.

Apples—Good crop of Wealthy apples but other varieties poor; crop sixty-five per cent of crop.

Other Fruits—Plums and cherries almost a failure, other fruits generally good.

Cattle—Healthy and in good condition.

Horses—Good condition.

Swine—Generally healthy; about seventy-five per cent of pig crop.

Sheep—Healthy.

Poultry—Crop was late but the average number of chickens raised; turkey crop light.

Bees—A poor season for honey.

Drainage—A large number of drains are being constructed and over twenty county ditches have been dug or are contracted for varying in length from three to twenty-nine miles.

Lands—Not much land changing hands but sales have been made recently at prices ranging from $52.50 to $100 per acre.

Report of Fair—Held at Clarion, September 3 to 6, with good exhibits and attractions; receipts sufficient to pay expenses.

1907 FINANCIAL STATEMENTS OF COUNTY AND DIS

Number	County or District	Receipts			
		Balance on hand	Miscellaneous receipts	State appropriation	Total
1	Adair	------------	$ 2,506.30	$ 200.00	$ 2,706.30
2	Adair District	------------	882.85	159.86	1,042.71
3	Adams	279.80	2,525.00	200.00	3,004.80
4	Allamakee	266.32	2,523,90	160.60	2,950.82
5	Audubon	364,28	3,145.93	200.00	3,710.21
6	Benton	------------	1,987.68	126.80	2,114.48
7	Black Hawk—La Porte City District	------------	------------	------------	------------
8	Boone	------------	1,232.20	200.00	1,432.20
9	Boone—Driving Park Association	------------	936.40	112.80	1,049.20
10	Buchanan	------------	1,962.95	200.00	2,162.95
11	Buena Vista	25.40	6,207.40	200.00	6,432.80
12	Butler	11.49	3,920.98	200.00	4,132.47
13	Calhoun	85.15	2,896.40	200.00	3,181.55
14	Cass	44.88	3,736.07	200.00	3,980.95
15	Cass—Massena District	144.40	3,196.89	200.00	3,541.29
16	Cedar—Tipton Fair Association	------------	2,515.15	200.00	2,715.15
17	Cerro Gordo—Northern Ia. Agr'l Soc.	------------	7,917.33	200.00	8,117.33
18	Chicksaw—Big Four Fair	1,170.87	2,191.95	200.00	3,562.82
19	Clayton	393.99	2,610.75	200.00	3,204.74
20	Clayton—Strawberry Point District	22.71	3,126.46	200.00	3,349.17
21	Clayton—Elkader Association	71.69	2,972.95	200.00	3,244.64
22	Clinton	199.64	4,453.13	200.00	4,852.77
23	Clinton—Clinton District	136.94	6,174.03	200.00	6,510.97
24	Crawford	------------	1,014.80	92.10	1,106.90
25	Davis	------------	3,147.68	200.00	3,347.68
26	Delaware	9.14	2,202.65	151.60	2,363.39
27	Emmet—Estherville Society	------------	1,697.03	200.00	1,897.03
28	Fayette	153.35	3,721.31	200.00	4,074.63
29	Floyd	2.65	3,201.62	200.00	3,404.27
30	Franklin	64.74	2,553.39	200.00	2,818.13
31	Guthrie	------------	2,510.15	200.00	2,710.15
32	Hamilton	24.61	2,286.55	139.38	2,450.54
33	Hancock	------------	1,573.75	200.00	1,773.75
34	Hardin	60.50	5,038.90	200.00	5,299.40
35	Harrison	46.85	2,671.65	189.80	2,908.30
36	Henry	7.70	6,633.89	200.00	6,841.59
37	Henry—Winfield Association	13.49	3,284.44	200.00	3,497.93
38	Humboldt	------------	2,338.74	200.00	2,538.74
39	Iowa	11.51	3,226.82	173.18	3,411.51
40	Iowa—Victor District	209.00	1,874.00	160.00	2,243.00
41	Iowa—Williamsburg Association	131.14	2,727.85	200.00	3,058.99
42	Jackson	68.08	5,567.50	200.00	5,835.58
43	Jasper	300.00	4,002.40	200.00	4,502.40
44	Jefferson	247.51	3,090.00	200.00	3,537.51
45	Jones	358.10	4,837.20	154.10	5,349.40
46	Jones—Anamosa Association	132.54	6,521.20	200.00	6,853.74
47	Keokuk—What Cheer District	39 60	3,788.71	200.00	4,082.31
48	Kossuth	195 56	9,118.20	200.00	9,513.76
49	Lee	20.20	2,157.55	197.58	2,375.33
50	Lee—West Point District	21.41	2,524.77	125.87	2,672.05
51	Linn—Wapsie Valley Association	------------	3,577.10	200.00	3,777.10
52	Louisa—Wapello District	------------	2,423.95	200.00	2,623.95
53	Louisa—Columbus Junction District	------------	3,161.00	200.00	3,361.00
54	Lyon	769.36	11,541.14	200.00	12,510.50
55	Madison	442.11	3,498.32	200.00	4,140.43
56	Mahaska—New Sharon District	44.11	3,527.50	200.00	3,771.61
57	Marion—Lake Prairie District	------------	3,055.38	200.00	3,255.38
58	Marshall	1,123.04	8,457.23	200.00	9,780.27
59	Marsall—Eden District	------------	1,007.90	200.00	1,207.90
60	Mills	124.31	3,442.65	200.00	3,766.96
61	Mitchell	358.38	3,655.80	200.00	4,214.18
62	Monona	------------	2,308.00	200.00	2,508.00
63	Muscatine—Union District	------------	4,627.80	200.00	4,827.80
64	Muscatine—Wilton Association	------------	2,709.66	196.72	2,906.38
65	O'Brien	115.70	3,111.38	200.00	3,427.08
66	O'Brien—Sheldon District	433.87	5,433.25	200.00	6,067.12
67	Page—Clarinda Association	391.66	5,574.84	200.00	6,166.50
68	Page—Shenandoah Association	128.56	6,484.45	200.00	6,813.01
69	Palo Alto	------------	2,042.95	183.90	2,226.85

TRICT FAIRS IN IOWA RECEIVING STATE AID 1907

Disbursements				Profit and Loss		Assets and Liabilities		
Miscellaneous expense	Speed premiums	Other premiums	Total	Balance Nov. 1, 1907	Overdraft	Value of property	Indebtedness	Number
$ 1,705.24	$ 635.00	$ 518.54	$ 2,888.78	-----------	$ 182.48	$ 6,300.00	$ 1,270.00	1
633.73	-----------	399.65	1,033.38	9,33	-----------	-----------	-----------	2
555.41	1,045.00	698.50	2,298.91	705.89	-----------	10,000.00	-----------	3
1,385.40	1,038.25	401.50	2,825.15	125.67	-----------	4,000.00	-----------	4
1,093.98	1,309.15	520.19	2,923.32	786.89	-----------	6,000.00	700.00	5
885.54	640.00	317.00	1,842.54	271.94	-----------	6,000.00	2,000.00	6
-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	7
666.10	85.00	613.70	1,364.80	67.40	-----------	6,000.00	2,400.00	8
371.97	500.00	282.00	1,153.97	-----------	104.77	12,000.00	4,000.00	9
1,465.55	-----------	613.91	2,079.46	83.49	-----------	8,500.00	1,173.53	10
2,664.35	2,775.00	936.00	6,375.35	57.45	-----------	15,000.00	-----------	11
2,462.08	790.50	676.65	3,929.23	203.24	-----------	4,500.00	400.00	12
2,005.46	270.00	605.00	2,880.46	301.09	-----------	7,500.00	1,600.00	13
1,314.88	1,150.00	1,037.05	3,501.93	479.02	-----------	8,000.00	2,900.00	14
2,049.53	757.99	537.25	3,344.77	196.52	-----------	3,911.34	-----------	15
1,684.90	1,002.00	561.33	3,248.23	-----------	533.08	6,000.00	3,000.00	16
4,573.11	1,221.00	913.80	6,707.91	1,409.42	-----------	-----------	-----------	17
1,215.25	-----------	856.00	2,071.25	1,491.57	-----------	6,000.00	3,000.00	18
2,213.22	610.00	740.35	3,563.51	-----------	358.83	3,000.00	-----------	19
1,533.60	1,105.00	655.25	3,293.85	55.32	-----------	4,500.00	1,150.00	20
1,678.69	1,247.50	642.55	3,568.74	-----------	324.10	8,000.00	3,965.00	21
3,967.91	1,270.00	1,122.30	6,360.21	-----------	1,507.44	5,500.00	1,600.00	22
3,743.81	1,385.00	1,239.75	6,368.56	142.41	-----------	10,034.10	-----------	23
514.00	225.00	230.25	969.25	137.65	-----------	-----------	-----------	24
1,240.33	1,215.00	892.35	3,347.68	-----------	-----------	7,000.00	950.00	25
1,196.98	758.00	379.00	2,333.98	29.41	-----------	5,000.00	2,645.60	26
1,114.10	-----------	573.75	1,687.85	209.18	-----------	-----------	-----------	27
2,434.67	442.75	779.75	3,657.17	417.49	-----------	10,000.00	-----------	28
1,613.26	1,000.00	731.85	3,345.11	59.16	-----------	5,000.00	950.00	29
2,207.92	120.00	664.25	2,992.17	-----------	174.04	6,000.00	1,870.04	30
1,196.85	800.00	625.15	2,622.00	88.15	-----------	7,000.00	1,200.00	31
1,163.03	508.50	348.45	2,019.98	430.56	-----------	-----------	-----------	32
867.20	442.14	540.18	1,849.52	-----------	75.77	3,000.00	1,100.00	33
2,100.00	1,800.00	852.25	4,752.25	547.15	-----------	5,000.00	1,100.00	34
1,033.67	1,050.00	474.50	2,558.17	350.13	-----------	10,000.00	-----------	35
2,648.50	2,650.00	1,013.70	6,312.20	529.39	-----------	12,000.00	-----------	36
1,161.77	1,272.00	948.10	3,381.87	116.06	-----------	6,000.00	-----------	37
1,229.77	736.00	727.55	2,693.32	-----------	154.58	3,000.00	-----------	38
1,473.40	1,500.00	432.95	3,406.35	5.16	-----------	4,500.00	1,500.00	39
1,121.00	722.00	400.00	2,243.00	-----------	-----------	2,000.00	550.00	40
1,498.00	727.00	639.30	2,864.30	194.69	-----------	4,500.00	2,313.93	41
2,201.56	2,270.00	734.20	5,205.76	629.82	-----------	10,000.00	3,000.00	42
1,597.29	1,553.00	862.97	4,013.26	489.14	-----------	6,000.00	1,300.00	43
811.23	2,080.00	717.50	3,608.73	-----------	71.22	7,000.00	1,600.00	44
3,533.00	835.00	385.25	4,753.25	596.15	-----------	4,500.00	-----------	45
5,162.88	1,067.50	568.80	6,799.18	54.56	-----------	12,000.00	2,100.00	46
2,210.00	1,500.00	526.50	4,236.50	-----------	208.19	5,000.00	-----------	47
6,857.18	1,610.00	1,011.95	9,479.13	34.63	-----------	1,500.00	6,400.00	48
846.52	860.00	493.95	2,200.47	174.86	-----------	2,000.00	-----------	49
1,052.33	1,285.00	314.68	2,652.01	20.04	-----------	4,400.00	2,150.00	50
2,464.04	-----------	975.95	3,439.99	337.11	-----------	4,500.00	2,400.00	51
1,820.11	465.00	681.10	2,966.21	-----------	342.26	5,000.00	1,800.00	52
1,425.00	990.00	1,006.75	3,421.75	-----------	60.75	7,000.00	3,700.00	53
7,561.70	2,981.00	705.00	11,247.70	1,262.80	-----------	16,861.52	-----------	54
2,005.12	1,200.00	903.30	4,108.42	32.01	-----------	6,000.00	2,000.00	55
1,817.67	1,350.00	597.87	3,765.54	6.07	-----------	6,600.00	400.00	56
2,467.64	386.50	578.80	3,432.94	-----------	177.56	7,800.00	731.56	57
3,985.37	2,018.50	1,416.75	7,420.62	2,359.65	-----------	5,564.46	-----------	58
507.21	-----------	595.50	1,102.71	105.19	-----------	2,400.00	504.04	59
1,354.86	1,880.00	532.10	3,766.96	-----------	-----------	5,000.00	711.76	60
2,938.03	178.00	540.10	3,656.13	558.05	-----------	4,000.00	-----------	61
710.00	1,088.75	509.25	2,308.00	200.00	-----------	12,000.00	2,000.00	62
1,452.98	1,770.00	1,515.50	4,738.48	89.32	-----------	5,000.00	-----------	63
1,175.44	1,268.00	491.80	2,935.24	-----------	28.86	1,500.00	-----------	64
3,056.80	155.00	534.95	3,746.75	-----------	319.67	3,125.00	1,200.00	65
2,863.97	1,642.50	571.25	5,077.72	989.40	-----------	3,000.00	-----------	66
2,756.97	888.00	682.00	4,326.97	1,839.53	-----------	10,000.00	-----------	67
5,146.84	1,575.90	880.20	7,602.94	-----------	789.93	12,000.00	1,021.63	68
879.10	888.00	459.75	2,226.85	-----------	-----------	-----------	-----------	69

1907 FINANCIAL STATEMENTS OF COUNTY AND DIS

Number	County or District	Receipts			
		Balance on hand	Miscellaneous receipts	State appropriation	Total
70	Pocaontas—Big Four District	48.64	5,320.20	200.00	5,568.84
71	Pottawattamie	618.31	3,933.88	200.00	4,752.19
72	Poweshiek at Malcom	200.92	3,010.83	200.00	3,411.75
73	Poweshiek at Grinnell		3,838.20	200.00	4,038.20
74	Sac		4,315.55	173.46	4,489.01
75	Shelby	97.20	4,088.68	200.00	4,385.88
76	Sioux	80.95	1,565.77	187.02	1,833.74
77	Story	195.78	2,379.85	200.00	2,775.63
78	Tama	200.51	2,328.53	200.00	2,729.04
79	Taylor		2,269.87	200.00	2,469.87
80	Union—Creston District	485.82	4,097.30	200.00	4,783.12
81	Van Buren—Milton District	11.20	1,930.35	200.00	2,141.55
82	Wapello—Eldon Big Four Ass'n		4,010.60	200.00	4,210.60
83	Warren		3,941.90	200.00	4,141.90
84	Winnebago—Forest City Association	41.61	1,280.29	200.00	1,521.90
85	Winnebago—Buffalo Center Ass'n		1,202.20	73.64	1,275.84
86	Winneshiek	3.53	2,954.86	200.00	3,158.39
87	Worth	87.51	1,606.05	200.00	1,893.56
88	Wright		2,072.75	174.20	2,246.95
	Total	$ 11,338.32	$298,725.41	$ 16,532.61	$ 326,596.34
	For comparison with 1906 statement; 84 Fairs reporting	$ 20,061.26	$279,427.42	$ 16,596.23	$ 316,084.91

TRICT FAIRS IN IOWA RECEIVING STATE AID 1907—CONTINUED

Disbursements				Profit and Loss		Assets and Liabilities		
Miscellaneous expense	Speed premiums	Other premiums	Total	Balance Nov. 1, 1907	Overdraft	Value of property	Indebtedness	Number
2,250.00	2,700.00	512.00	5,462.00	106.84	------------	10,000.00	1,500.00	70
1,961.47	1,554.00	767.18	4,282.65	469.54	------------	6,000.00	1,100.00	71
1,477.66	1,200.00	694.00	3,371.66	40.09	------------	7,500.00	200.00	72
1,506.47	1,495.00	564.25	3,565.72	472.48	------------	9,000.00	3,875.00	73
1,792.20	2,250.00	433.65	4,475.85	13.16	------------	3,000.00	------------	74
1,866.74	1,870.00	817.09	4,553.83	------------	167.95	9,000.00	------------	75
470.14	384.01	467.55	1,321.70	512.04	------------	4,000.00	700.00	76
1,538.82	------------	947.70	2,486.52	289.11	------------	4,500.00	3,028.42	77
1,259.90	627.50	772.45	2,659.85	69.19	------------	2,500.00	------------	78
523.79	1,326.70	619.38	2,469.87	------------	------------	4,000.00	------------	79
1,937.75	1,777.00	980.50	4,695.25	87.87	------------	10,000.00	------------	80
914.12	840.35	506.56	2,261.03	------------	119.48	3,000.00	1,650.00	81
1,388.15	1,636.25	916.95	3,941.35	269.25	------------	4,500.00	1,900.00	82
645.00	1,713.75	937.35	3,296.10	845.80	------------	10,000.00	7,600.00	83
900.78	------------	603.99	1,504.77	17.13	------------	5,000.00	------------	84
953.90	70.00	184.10	1,208.00	67.84	------------	2,500.00	1,000.00	85
1,702.76	270.00	532.25	2,505.01	653.38	------------	1,500.00	------------	86
1,023.43	181.50	565.17	1,770.10	123.46	------------	4,000.00	246.50	87
771.45	1,040.00	435.50	2,246.95	------------	------------	5,000.00	2,000.00	88
$161,231.53	$ 89,526.49	$ 58,222.94	$308,980.96	$ 23,316.34	$5,700.96	$518,996.42	$101,157.01	
$159,334.43	$ 83,583.91	$ 59,961.20	$302,879.54	$ 18,090.14	$4,884.77	$496,702.71	$103,507.47	

PART XII

Horse Breeding Industry in Iowa

Law Governing State Enrollment of Stallions Standing in Public Service, With List of Certificates Issued to May 1, 1908

WORTHLESS GRADE STALLIONS.

From "The Horseman."

Not many years ago it was thought a national good was being done when farmers and other stock breeders were showing a disposition to improve the horses of the country by the use of grade stallions. These half or three-quarter grades which were brought into use were indeed superior to the local scrub stock, and in some instances an improvement was noted. But on the whole, little good ever came of the use of grade stock of any kind for the purpose of improving a scrub group.

Grade horses, it should be known, are not bred from grade stallions. Such breeding constitutes mongrelizing. True grades are the product of pure blood on one side and such grades which are half-breeds in the first instance may be graded up by breeding them on the pure bred sire or dam. And the further this grading process is carried on the higher the grade becomes, until, finally, an animal is produced which will be in the matter of prepotency essentially pure.

Grading up common stock by the use of pure bred stallions makes always for an improvement in the general group, but any attempt to grade up or improve a horse group by the use of grade sires themselves is a waste of time and money, and is as a breeding folly and generally speaking a failure.

Of so much importance to the State is the character of its stock that it is only the part of wisdom for such governments to take a paternal interest in the horses within its borders at all times, and, when warranted by conditions, takes absolute control and regulate by laws the use of stallions.

The states are doing this to some extent now, only they have not yet gone quite far enough. Wisconsin, a State that can boast of a large number of pure bred horses of a variety of breeds, can also lay claim to a premium on worthless grade stallions which are used to pollute the horse blood of the state. Slowly but surely the state officials who know the value of good blood are devising means of ridding the state of its worthless stallions. These officials realize that we have long since passed even the good grade stallion period. There are plenty of well bred, pure bred horses in the country of all varieties and there is no sort of excuse for the natural resources of a state being wasted on poor horses. Premiums, to which the State contributes, for grade stock should be abolished. A prerequisite for entry at any show using state money should be a pedigree denoting purity of blood from a breeding point of view. We do not care to know which horse is the best of a lot of grades. We do want to know which is the highest type of horse of a recognized breed. The State can afford to encourage good breeding through subsidies, but it should discourage the use of grade stallions by all means within its proper power.

LAWS OF IOWA.

A BILL for an act to repeal Chapter Ninety-eight (98), Acts of the Thirty-first General Assembly, and to enact a substitute therefor, relative to the registration and publication of pedigrees.

Be It Enacted by the General Assembly of the State of Iowa:

SECTION 1. That Chapter Ninety-eight (98) of the Acts of the Thirty-first General Assembly be, and the same is hereby repealed, and the following enacted in lieu thereof:

SEC. 2. Any owner or keeper of any stallion kept for public service, or any owner or keeper of any stallion kept for sale, exchange or transfer, who represents such animal to be pure bred, shall cause the same to be registered in some stud book recognized by the Department of Agriculture at Washington, D. C., for the registration of pedigrees, and obtain a certificate of registration of such animal. He shall then forward the same to the Secretary of the State Board of Agriculture of the State of Iowa, whose duty it shall be to examine and pass upon the correctness or genuineness of such certificate filed for enrollment. In making such examination, said secretary shall use as his standard the stud books recognized by the Department of Agriculture at Washington, D. C., and shall accept as pure bred any animal registered in any such stud books. And if such registration is found to be correct and genuine, he shall issue a certificate under the seal of the Department of Agriculture, which certificate shall set forth the name, sex, age and color of the animal, also the volume and page of the stud book in which said animal is registered. For each enrollment and certificate he shall receive the sum of one dollar, which shall accompany the certificate of registration when forwarded for enrollment.

SEC. 3. Any owner or keeper of a stallion for public service, who represents or holds such animal as pure bred, shall place a copy of the certificate of the State Board of Agriculture on the door or stall of the stable where such animal is usually kept.

SEC. 4. Any owner or keeper of a stallion kept for public service, for which a State certificate has not been issued, must advertise said horse or horses by having printed hand bills, or posters, not less than five by seven inches in size, and said bills or posters must have printed thereon immediately preceding or above the name of the stallion, the words "grade stallion," in type not smaller than one inch in height, said bills or posters to be posted in a conspicuous manner at all places where the stallion or stallions are kept for public service.

SEC. 5. If the owner of any registered animal shall sell, exchange or transfer the same, and file said certificate, accompanying the same with a fee of fifty cents, with the Secretary of the State Board of Agriculture, who shall, upon receipt of the original State certificate, properly transferred, and the required fee, issue a new certificate to the then new owner of the animal. And all fees provided by this act shall go into the treasury of the Department of Agriculture.

SEC. 6. Any person who shall fraudulently represent any animal, horse, cattle, sheep or swine, to be pure bred, or any person who shall post or publish, or cause to be posted or published, any false pedigree or certificate, or shall use any stallion for public service, or sell, exchange or transfer any stallion, representing such animal to be pure bred, without first having such animal registered, and obtaining the certificate of the State Board of Agriculture as hereinbefore provided, or who shall violate any of the provisions of this act, shall be guilty of a misdemeanor, and be punished by a fine of not more than one hundred dollars, or imprisoned in the county jail not exceeding thirty days, or by both such fine and imprisonment.

Approved March 30, 1907.

STUDBOOKS RECOGNIZED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE.

HORSES.

American Books of Record.

American Trotter	American Trotting Register.	American Trotting Register Association, Wm. H. Knight, secretary, 355 Dearborn street, Chicago, Ill.
Belgian Draft.	American Register of Belgian Draft Horses.	American Association of Importers and Breeders of Belgian Draft Horses, J. D. Conner, Jr., secretary, Wabash, Ind.
Cleveland Bay.	American Cleveland Bay Studbook.	Cleveland Bay Society of America, R. P. Stericker, secretary, 80 Chestnut avenue, West Orange, N. J.
Clydesdale ...	American Clydesdale Studbook.	American Clydesdale, Association, R. B. Ogilvie, secretary, Union Stock Yards, Chicago, Ill.
French Coach.	French Coach Horse Register.	French Coach Horse Registry Company, Charles C. Glenn, secretary, Columbus, Ohio.
French Coach.	French Coach Studbook.	French Coach Horse Society of America, Duncan E. Willett, secretary, Maple avenue and Harrison street, Oak Park, Ill.
French Draft..	National Register of French Draft Horses.	National French Draft Horse Association of America, C. E. Stubbs, secretary, Fairfield, Iowa.
German Coach.	German, Hanoverian, and Oldenburg Coach Horse Studbook.	German, Hanoverian, and Oldenburg Coach Horse Association of America, J. Crouch, secretary, Lafayette, Ind.
Hackney	American Hackney Studbook.	American Hackney Horse Society, Gurney C. Gue, secretary, 308 West 97th street, New York, N. Y.
Morgan	American Morgan Register.	American Morgan Register Association, H. T. Cutts, secretary, Middlebury, Vt.
Oldenburg	Oldenburg Coach Horse Register.	Oldenburg Coach Horse Association of America, C. E. Stubbs, secretary, Fairfield, Iowa.
Percheron	Percheron Studbook of America*	Percheron Society of America, Geo. W. Stubblefield, secretary, Union Stock Yards, Chicago, Ill.
Percheron	Percheron Register......	The Percheron Registry Company, Chas. C. Glenn, secretary, Columbus, Ohio.
Percheron	The American Breeders' and Importers' Percheron Register.	The American Breeders' and Importers' Percheron Registry Company, John A. Forney, secretary, Plainfield, Ohio.
Saddle Horse..	American Saddle Horse Register.	American Saddle Horse Breeders' Association, I. B. Nall, secretary, Louisville, Ky.
Shetland Pony.	American Shetland Pony Club Studbook.	American Shetland Pony Club, Mortimer Levering, secretary, Lafayette, Ind.
Shire	American Shire Horse Studbook.	American Shire Horse Association, Charles Burgess, secretary, Wenona, Ill.
Suffolk	American Suffolk Horse Studbook.	American Suffolk Horse Association, Alex. Galbraith, secretary, Janesville, Wis.
Thoroughbred .	American Studbook.....	The Jockey Club, W. H. Rowe, registrar. 571 Fifth Avenue, New York, N. Y.
Welsh Pony and Cob	Welsh Pony and Cob Studbook.	The Welsh Pony and Cob Society of America, John Alexander, secretary, Aurora, Ill.

ASSES.

Jacks and Jennets	American Jack Stock Studbook.	American Breeders' Association of Jacks and Jennets, J. W. Jones, secretary, Columbia, Tenn.

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*Absorbed interests of the American Percheron Horse Breeders' Association, May 9, 1904, whose certificates issued prior to that date only, signed by S. D. Thompson, as Secretary, will be recognized.

HORSES.

Foreign Books of Record.

Belgian Draft.	Studbook des Chevaux de Trait Belges.	Societe Le Cheval de Trait Belge, Chevalier G. Hynderick, secretary, Brussels, Belgium.
Boulonnaise* .	Studbook des Chevaux de Trait Francais.	Societe des Agriculteurs de France, M. Henri Johanet, secretary, 8 Rue de Athenes, Paris, Francis.
Cleveland	Cleveland Bay Studbook.	Cleveland Bay Horse Society of Great Britain and Ireland, Thos. Curry, Jr., secretary, Morton Carr, Nunthorpe, R. S. O., England.
Clydesdale ...	Clydesdale Studbook	Clydesdale Horse Society of the United Kingdom of Great Britain and Ireland, Arch'd MacNeilage, secretary, 93 Hope street, Glasgow, Scotland.
East Friedland Coach	Ostfriesisches Studbuch..	Landwirthschaftlichen Hauptverein fur Ostfriesland.
French Coach.	Le Studbook Francais, Registre des Chevaux de Demi-Sang.	Commission des Studbook des Chevaux de Demi-Sang, Director-General des Haras, Ministere de l'Agriculture, Paris, France.
French Draft**	Studbook des Chevaux de Trait Francais.	Societe des Agriculteurs de France, M. Henri Johanet, secretary, 8 Rue d'Athenes, Paris, France.
Hackney	Hackney Studbook	Hackney Horse Society, Frank F. Euren, secretary, 12 Hanover square, London, W., England.
Hanoverian ...	Hanoverian Studbook ...	Hannoversche Stutbuch Commission, Freiherr V. Troschke, president, Hanover, Germany.
Holstein Coach	Gestutbuch der Holsteinischen Marschen.	Verband der Pferdeguchtvereine in den Holsteinischen Marschen, Martin Thormahlen, secretary, Moorhusen per Elmshorn, Holstein, Germany.
Oldenburg Coach	Oldenburger Stutbuch...	Verband der Zuchter des Oldenburger eleganten schweren Kutschpferdes, Justus Schussler, secretary-treasurer, Rodenkirchen, Oldenburg, Germany.
Oldenburg Coach	Stutbuch der Musteriandisch-Oldenburgischen Geest.	Zuchtverband des sudlichen Zuchtgebieties, J. W. Runge, secretary, Oldenburg, Germany.
Percheron	Studbook Percheron de France.	La Societe Hippique Percheronne de France, M. A. Thieux, secretary, Nogent-le-Rotrou, France.
Shire	Shire Horse Studbook...	Shire Horse Society, J. Sloughgrove, secretary, Hanover square, London, W., England.
Shetland Pony.	Shetland Pony Studbook.	Shetland Pony Studbook Society, Robert R. Ross, secretary, Balmoral Buildings, Aberdeen, Scotland.
Suffolk	Suffolk Studbook	Suffolk Horse Society, Fred Smith, secretary, Rendelsham, Woodbridge, Suffolk, England.
Trakehnen	Ostpreussisches Stutbuch.	Landwirthshaftlichen Central-Verein fur Litauen und Masuren, C. M. Stoeckel, secretary, Insterburg, East Prussia.
Thoroughbred .	Australian Studbook ...	W. C. Yuille & Sons, Melbourne, Australia.
Thoroughbred .	General Studbook	Weatherby & Sons, 6 Old Burlington street, London, W., England.
Thoroughbred .	Le Studbook Francais, Registre des Chevaux de Pur-Sang.	Commission des studbook des Chevaux de Pur-Sang, Directeur-General des Haras, Ministere de l'Agriculture, Paris, France.
Yorkshire	Yorkshire Coach Horse Studbook.	Yorkshire Coach Horse Society of Great Britain and Ireland, John White, secretary, The Grange, Appleton, Roebuck. Bolton, Percy, R. S. O., England.
Welsh Pony and Cob	Welsh Pony and Cob Studbook.	The Welsh Pony and Cob Society, James Hamer, secretary, Greenfield, Penydont Radnorshire. Wales.

*See French Draft. **See Boulonnaise.

The State Department of Agriculture can only recognize certificates issued by the associations herewith printed.

NUMBER AND CHARACTER OF CERTIFICATES ISSUED TO MAY 1, 1908.

Counties	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenburg Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thoroughbred	Total
Adair	11	2	1	6		2					9			14		2	47
Adams	10	2		4		2					36			5			59
Allamakee	1	6			1	1					9			1			19
Appanoose	6	1	1	8		2					8			6		1	33
Audubon	3	2		6		4	1				5			2			23
Benton	6	10			3	2				1	15			5			42
Black Hawk	11	3		3		2	1		1	1	16		1	6			45
Boone	6	8		2		11					9			2			38
Bremer	1	2		4	1	1			2		9		1				21
Buchanan	6	1				4					16			2			29
Buena Vista	7	4		2		2					12			4			31
Butler	5	4		2		1				1	10			1			25
Calhoun	9	6			1	3					23			9			51
Carroll	3	5		1		6					17				1		33
Cass	10	6		8		5	3		1		14			10	2	1	60
Cedar	6					4					12			9			31
Cerro Gordo	3	3				1					16			5			28
Cherokee	2	5				1					18						26
Chickasaw	9	4		13		2	2		1		24			3			58
Clarke	5	4		2		9		1		1	76			15			113
Clay	2	2		1	1						14			3			23
Clayton	6	3			1						14		1	4			29
Clinton	5	3				3					12		1	2			26
Crawford	5	6				6	2			1	12			1	2		35
Dallas	9	9				11	1			1	16	1		8			56
Davis	7			1		13			1		23					1	46
Decatur	5	5		1		5		1			14			9			40
Delaware	6	83		4	3		17	24			161			13			311
Des Moines	4					3					4			2			13
Dickinson	7			2		1					18			3			31
Dubuque	4	12		1		1			1		14			1			34
Emmet	4	3		2	1	2				1	10			1			23
Fayette	6	10		1		3	1				17			3			41
Floyd	1	5			2		1				19			1			29
Franklin	1	1		2		3	1		1		8			4			21
Fremont	1	1								2	12		1	1			18
Greene	4	8		2		5					20			6			45
Grundy	1	1		3	1	1	1	1		4	21						34
Guthrie	13	4		7	1	6		1			12			7			51
Hamilton	7	5		1	1				1		20	1	1	2			39
Hancock	1	5		2		3					6			2			19
Hardin	5	4		1		2	1		3	1	25			3			45
Henry	9	1		6	1	10		1			16			13			57
Harrison	9	5		2	2						13			2			33
Howard	1	10		4	1	1					7						24
Humboldt	4	3		1		1	2				9			3			23
Ida	7	3		1		2	1		1		14		1	3			33
Iowa	10	7		11	2	3	1				19			8			61
Jackson	9	8		1		2					14			1			35
Jasper	9	2		6	2	5	1	1			29			6		1	62
Jefferson	17	4		5		14			1		23			11			75
Johnson	7	5		2		9	1				19	2		5			50
Jones	7	7		10	1	2					4			3			34
Keokuk	8	5		8	1	15	1				31			15			84
Kossuth	3	6		5	2	3	1				15			8			43
Lee	7		1			2					10			1			21
Linn	13	65		3	1	2	1	1	1		41		1	7		1	137
Louisa	7	4		1	1	3					17			2			35
Lucas	5			6		5			9		33			9			67

Counties	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenberg Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thorough-bred	Total
Lyon	1	2	----	----	----	3	1	----	----	----	14	----	----	----	----	----	21
Madison	7	2	----	----	1	4	1	1	1	----	17	----	----	6	----	----	40
Mahaska	5	1	----	8	1	18	----	1	----	----	26	----	----	4	1	----	65
Marion	15	4	----	4	----	6	----	----	----	----	21	----	----	11	----	----	61
Marshall	9	3	----	6	----	4	----	----	----	----	16	----	1	4	----	----	43
Mills	6	1	----	----	----	----	----	----	----	1	12	----	----	10	----	----	30
Mitchell	7	2	----	2	1	4	1	----	2	----	18	----	----	3	----	----	40
Monona	3	----	----	1	----	1	----	----	----	----	15	----	----	----	----	----	20
Monroe	6	----	----	1	----	1	1	----	----	----	8	----	----	9	----	----	26
Montgomery	6	----	----	----	----	5	1	----	1	----	9	----	----	9	----	----	31
Muscatine	10	1	----	----	1	1	----	----	----	----	16	----	1	3	----	----	33
O'Brien	12	3	2	2	2	2	----	1	2	3	21	----	----	4	----	----	54
Osceola	3	3	----	----	----	1	1	----	----	----	10	----	----	2	----	----	20
Page	11	1	----	----	----	14	----	----	----	1	19	----	----	8	----	1	55
Palo Alto	7	1	----	1	----	2	----	----	----	----	15	----	----	6	----	----	32
Plymouth	1	1	----	1	1	----	1	----	----	1	11	----	----	----	1	1	19
Pocahontas	9	5	----	2	----	6	----	----	----	----	20	----	----	3	----	----	45
Polk	17	10	----	1	----	6	1	----	----	----	28	1	----	11	----	----	75
Pottawattamie	11	5	----	2	2	5	3	----	2	----	20	----	----	7	1	----	58
Poweshiek	7	10	----	9	----	1	----	----	2	----	15	----	1	10	1	----	56
Ringgold	9	2	----	4	----	6	1	----	1	----	21	----	----	5	1	----	53
Sac	9	7	----	7	----	3	----	----	----	----	19	----	----	6	----	----	51
Scott	5	1	----	----	----	2	----	----	----	1	6	----	----	----	----	----	15
Shelby	4	3	----	----	1	2	----	----	1	----	15	----	----	3	----	----	29
Sioux	4	1	----	3	----	2	----	----	----	----	18	----	----	----	----	----	28
Story	1	6	----	2	1	3	----	----	1	----	32	----	----	5	----	----	48
Tama	14	5	----	9	----	4	----	----	----	----	24	----	----	6	----	----	62
Taylor	14	8	----	5	----	9	----	----	1	----	60	----	----	12	----	----	109
Union	7	6	----	1	2	5	----	----	2	----	46	----	----	32	----	----	101
Van Buren	3	2	----	6	1	7	----	----	----	1	25	1	----	5	----	----	51
Wapello	8	1	----	4	----	3	----	----	----	----	13	----	----	3	----	----	32
Warren	8	3	----	----	1	11	----	----	----	----	43	----	2	11	----	----	79
Washington	11	1	----	----	----	7	----	----	----	----	16	1	----	10	----	----	46
Wayne	6	3	----	----	----	6	----	1	1	----	12	----	----	13	----	----	42
Webster	2	7	----	2	----	2	----	----	----	----	13	----	----	3	----	----	29
Winnebago	4	1	----	----	1	1	----	----	----	----	15	----	----	----	----	----	22
Winneshiek	3	5	----	4	----	1	1	----	----	----	12	----	----	3	----	----	29
Woodbury	5	2	----	2	----	6	----	----	----	----	12	----	----	2	----	----	29
Worth	----	----	----	1	----	----	----	----	----	----	13	----	----	1	----	----	15
Wright	2	2	----	1	----	5	----	----	----	----	11	----	----	3	----	----	24
Horses owned near state line	----	----	----	----	----	----	----	----	----	----	6	----	----	2	----	----	8
Total	628	504	5	253	47	401	54	35	41	22	1906	7	13	506	10	9	4441

DIRECTORY OF OWNERS OF PURE BRED STALLIONS BY COUNTIES.

(Certificates Issued to May 1, 1908.)

ADAIR COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
396	John McDermott	Bridgewater	Billy Boy 33799	Percheron
395	John McDermott	Bridgewater	Nonpareil 23034	Percheron
394	John McDermott	Bridgewater	Honest Jerry 6374	Shire
1276	Middle River Horse Co	Greenfield	Jerrierais 31111 (43734)	Percheron
1279	C. P. Liegerot	Greenfield	Radio M. 37196	Trotter
1286	A. T. Mason	Greenfield	Top Shot 7718	Shire
1318	A. N. Vande-Water	Orient	Ben Faraday 38258	Thoroughbred
1379	E. W. Vandewater	Orient	Orphan Boy 10873	Clydesdale
1380	E. W. Vandewater	Orient	Crasher 9383	Clydesdale
1425	C. C. Havens	Greenfield	Creston Boy 6206	Shire
1528	H. H. Buck	Greenfield	Iowa Lee 40181	Trotter
1532	Fontanelle Coach Horse Co	Fontanelle	Vandyke 1169 (2371)	Cleveland Bay
1533	Fontanelle Percheron Horse Co	Fontanelle	Royaliste 31749 (45143)	Percheron
1554	F. W. Raasch	Bridgewater	Prince Improver 7839	Shire
1558	C. T. Jackson	Orient	Orient Boy 37691	Trotter
1557	C. T. Jackson	Orient	Bob McGregor 9752	Clydesdale
1603	Frank H. Edwards	Orient	Usurper 7567 (20996)	Shire
1630	J. A. Griswold	Greenfield	Billy Grayson 40899	Trotter
1631	J. A. Griswold	Greenfield	Simmons Star 33030	Trotter
1718	Wm. N. Green	Fontanelle	Botha 7003 (19390)	Shire
1757	F. P. Culverson	Greenfield	Counsellor Jr. 34958	Trotter
2220	C. L. Waltz	Spaulding	Toneham Strexton 8533 (23804)	Shire
2266	W. B. Hoskins	Orient	Pride of the West 7842	Shire
2621	F. P. Culverson	Greenfield	Canus 8683	Thoroughbred
2454	G. H. Sawyer	Greenfield	Black Jack IV. 6377 (19343)	Shire
2579	Grove Township Horse Co	Greenfield	Upas 14857 (59588) P	French Draft
2753	John Wynn	Greenfield	Rampton 12709	Clydesdale
67	Wynn Bros	Greenfield	Brampton Harold 6237	Shire
3115	E. J. Oshel	Orient	Joe Swift 37576	Trotter
3158	F. A. Strong	Orient	Wilfrid S. 39403	Trotter
3317	H. A. Alcorn	Adair	Lord Winchilsea 5720 (18170)	Shire
3326	Henion Drew	Orient	Billie Bryan 877	Belgian
3481	D. J. Cowden	Adair	Bishop Whitestockings 43519	Trotter
3501	Henion Drew	Orient	Beau Chief 9074	Shire
3553	Adair Horse Co	Adair	Baron de Bois (Vol. XII)	Belgian
3554	Adair Horse Co	Adair	Charmant 41039 (56088)	Percheron
3651	H. A. Alcorn	Adair	Nutborn 15736	Trotter
3694	Geo. Gruber	Fontanelle	King 13414	French Draft

ADAIR COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3697	C. T. Jackson	Orient	John Perfect 12361	Clydesdale
1606	A. E. Johnson	Orient	Soham Insurgent 6735	Shire
3986	Strong Bros	Orient	Nailstone Desert Chief 8829	Shire
1278	J. F. Dorsey	Greenfield	Vibrant 40702 (48891)	Percheron
4132	W. N. Foster	Orient	Turgot 54390 (64346)	Percheron
3942	J. P. Kembery	Bridgewater	Mongol Best 48019	Percheron
4245	G. W. Hill	Orient	Buzz K. 40414	Trotter
3697	O. T. Truman	Orient	John Perfect 12361	Clydesdale
4410	F. E. Louden	Middle River	Banker 51224	Percheron

ADAMS COUNTY

562	F. Hoskinson	Corning	Mustapha (53274)	Percheron
489	E. P. Chapman	Prescott	Beaumont 24984	Percheron
493	Holt Township Horse Co	Corning	Conine 9941	French Draft
417	C. M. Bickford	Mount Etna	Duke of Altorf 21071	Percheron
1029	L. H. Humbert & Son	Corning	Voltaire 45320 (56916)	Percheron
1030	L. H. Humbert & Son	Corning	Sully 21770 (40430)	Percheron
1355	J. M. Devore	Corning	Road Bird 22816	Trotter
1543	H. E. Nurdock	Brooks	Lesdiguieres (51818)	Percheron
1537	J. A. Bohanan	Corning	Prince Henry 10238	Clydesdale
178	Wm. F. Hough	Corning	Red Garnet 27132	Trotter
1802	Laban Harrison	Prescott	Prince Mac Lure 11665	Clydesdale
1801	Laban Harrison	Prescott	Demster H. 12145	Clydesdale
2275	J. H. King	Prescott	Kirk 6576	Shire
2292	L. D. Bishop	Brooks	LaSalle Star 37569	Trotter
2293	L. D. Bishop	Brooks	Waterloo 18609	Percheron
2302	E. Humbert	Corning	Pasteur 50660 (65523)	Percheron
2305	E. Humbert	Corning	Manceau 50657 (58834)	Percheron
2306	E. Humbert	Corning	Primo 50661 (64315)	Percheron
2609	Vicker & Blazek	Prescott	Domino 41882 (56570)	Percheron
2623	E. B. Hess	Corning	Good Morning 8822 (21468)	Shire
2650	J. N. B. Miller	Prescott	Brilliant 1372	Belgian
2651	J. N. B. Miller	Prescott	Plumeau d'Acosse 2041 (31098)	Belgian
2652	J. N. B. Miller	Prescott	Franklin 34653	Percheron
2443	E. L. Humbert	Corning	Jerry 29836	Percheron
2738	Hugh Coglan	Corning	Teddy 34721	Percheron
2739	Hugh Coglan	Corning	Frank 43555	Percheron
587	E. P. Chapman	Prescott	Snow Ball 21902	Percheron
2758	James Foy	Prescott	Apollon 26130 (42491)	Percheron
2886	J. N. Ankeny	Prescott	Nailstone Modern Type 7260 (21688)	Shire
2880	J. S. Bowman	Brooks	Comedian 50855 (61758)	Percheron
2879	J. S. Bowman	Brooks	Counter 15347	French Draft
2896	John H. Oshel	Nevinville	Electralto 23579	Trotter
2931	Humbert & Son	Corning	Sully Jr. 48106	Percheron
3060	E. A. Hoskinson	Corning	Carat 50652 (59920)	Percheron
3192	T. O. Swain	Corning	Hal Parker 034	Trotter
3287	Chas. Long	Corning	Bertie Long 37843	Trotter
3316	E. L. Humbert	Corning	Panama 50659 (52668)	Percheron
3448	Wm. F. Hough	Corning	Idylwild 36075	Trotter
3943	E. L. Humbert	Corning	Neocho 43339	Percheron
3942	E. L. Humbert	Corning	Mongol Best 48019	Percheron
3941	E. L.Humbert	Corning	Blue Sully 49694	Percheron
3944	E. L. Humbert	Corning	Alfred Sully 49692	Percheron
3945	E. L. Humbert	Corning	Arthur 52833 (62596)	Percheron
3946	E. L. Humbert	Corning	Ruyter 52839 (64289)	Percheron
3947	E. L. Humbert	Corning	Cremieux 52835 (58976)	Percheron
3948	E. L. Humbert	Corning	Bourbon 52834 (62605)	Percheron
3949	E. L. Humbert	Corning	Nondoin 52836 (58922)	Percheron
3950	E. L. Humbert	Corning	Soleil 52837 (57827)	Percheron
3951	E. L. Humbert	Corning	Inel 52841 (57625)	Percheron
3952	E. L. Humbert	Corning	Evans 52840 (64318)	Percheron
3953	E. L. Humbert	Corning	Joli 52838 (59404)	Percheron
1739	Eno & Heatherington	Corning	Lapon 32832 (46018)	Percheron
4065	E. L. Humbert	Corning	Jay Tee 46467	Percheron

ADAMS COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4078	Chas. Cook	Prescott	Fordy Premwilhar 9336 (24803)	Shire
4099	J. C. Reese	Prescott	Sammy R. 45537	Trotter
4432	Labon Harrison & Son	Prescott	King Chattan 13406	Clydesdale
4483	C. C. Cook	Prescott	Stuntney Daniel 9750 (23794)	Shire
4465	J. W. Bigger	Corning	Blue Grass Prince 45008	Trotter
4466	J. W. Bigger	Corning	Gamberton 43364	Trotter

ALLAMAKEE COUNTY

384	W. L. Leas	Rossville	Herbert 29743	Percheron
143	M. T. Jacobson	Waterville	Black Ball 24384	Percheron
142	M. T. Jacobson	Waterville	Alfonso 30940	Percheron
445	Jas. McCormick	Waterville	Bold Harry 5514	Shire
640	Elon Draft Horse Ass'n	Waterville	Gamin De Glabais 1547 (23560)	Belgian
974	John Munz	Church	Lorrain 20557	Percheron
1078	Waukon French Coach Stallion Co.	Waukon	Beau-Sire 3644	French Coach
1098	S. J. Svendson	Dorchester	Camille de Bierset 1548 (23056)	Belgian
1207	C. G. Holming & Co.	R. No. 1, Waukon	Document 710 (4980)	Belgian
1206	C. G. Holming & Co.	R. No. 1, Waukon	Gilbert 21037	Percheron
1437	Ludlow Percheron Horse Co.	Waukon	Englisch 1437	Percheron
2686	Jas. Honlihan	Harper's Ferry	Stick 45806 (61875)	Percheron
3039	Henry Grodegut	Waukon	Admiral de Tilly (26770)	Belgian
3205	P. H. O'Neill	Harper's Ferry	Iams Pedro 9870	French Draft
3444	Henry Lenz	Lansing	Bussy 15181 (29810)	Percheron
664	Lansing Draft Horse Co.	Lansing	Bismark de Seumoy 1311 (24150)	Belgian
4311	A. I. Steffen	Waukon	Logan 42037	Percheron
4317	Belgian Draft Horse Ass'n	Postville	Leon d'Or (27502)	Belgian
4404	H. H. Conley	Postville	Dr. Cram 42585	Trotter

APPANOOSE COUNTY

121	August Post	Moulton	Wayside Prince 10411	Clydesdale
120	August Post	Moulton	Wayside Douglass 9395	Clydesdale
119	August Post	Moulton	Wayside Regnant 9836	Clydesdale
199	Lincoln Knapp	Centerville	Sisteron 44301 (57869)	Percheron
672	John C. McConnell	Unionville	Keota-Allan 27631	Percheron
858	Eli Smith, Sr.	Unionville	Bury Beauchief II 6155 (17218)	Shire
1412	W. O. Doggett	Numa	Bob Brooks 43300	Trotter
1414	F. P. Hawks	Moravia	Cyprien 28435 (48438)	Percheron
1539	Smith & Clawson	Cincinnati	Brewer's Delight 6133 (19408)	Shire
2125	J. J. Strickler	Centerville	Black Sluggard 28582	Trotter
2126	J. J. Strickler	Centerville	Baron Dillon Jr. 33402	Trotter
2223	Udell Horse Co.	Udell	Taupin 26104 (46829)	Percheron
2261	W. H. Johnson	Moravia	Forton de Mons 1985 (25500)	Belgian
2588	Marion McCrory	Moravia	Gagnier 12666	French Draft
2770	Lincoln Knapp	Centerville	Keota Ben 7792	Shire
3003	J. R. Hensley	Mystic	Prince Esher 11907	Thoroughbred
3088	W. M. Jackson	Centerville	Dunsmore Klondyke 6164 (18706)	Shire
3087	W. M. Jackson	Centerville	Solide II 22672 (43537)	Percheron

APPANOOSE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3131	Cincinnati Horse Co.	Cincinnati	Marronier 32421 (48881)	Percheron
2991	C. E. Mathew and W. H. Howard	Moulton	Haddo of Hillsdale 12550	Clydesdale
3191	J. C. Stevenson	Cincinnati	Marksman 881 (991)	Cleveland Bay
3350	Hollingsworth & Vinzant	Centerville	Stettin 34504 (51406)	Percheron
3405	John C. McConnell	Unionville	Hugh Dillon 45361	Trotter
3523	E. G. Swain	Unionville	William J. Bryan 15359	French Draft
3579	D. A. Gregory	Moulton	King Royal 12481	Clydesdale
3638	Thos. E. Hopkins & Son	Unionville	Jack Sawyer 35577	Trotter
3857	Eli Smith, Sr.	Unionville	Bon Bacis 8790 (20281)	Shire
4056	Siler & Hurd	Moulton	Mitron 51377 (59142)	Percheron
1042	Siler & Hurd	Moulton	Bedwell Marquis 8326 (22101)	Shire
4280	J. A. Stice	Moulton	Noble 13413	Clydesdale
3042	C. D. Bent	Moravia	Centerville Prince 5292	Clydesdale
2198	Edward Gault	Mystic	King Robert 11918	Clydesdale
4408	C. E. Sawyers	Centerville	Ensign Dillon 47897	Trotter

AUDUBON COUNTY

353	Oakfield Township Horse Co.	Brayton	Monfino 28464 (44967)	Percheron
89	C. R. Wilson	Exira	Greely 12440	French Draft
93	Melville Draft Horse Co.	Audubon	Bon Rasselas 6064 (17789)	Shire
66	W. W. Weston	Audubon	Prince Brilliant 9854	Clydesdale
657	Pleasant Valley Horse Co.	Fiscus	Champagne Mecht 1340 (25514)	Belgian
713	M. P. Henricksen	Poplar	Uylisse 1714 (28228)	Belgian
1452	L. N. Esbeck	Exira	Enrage 8107 (844)	French Draft
1490	Powell & Harvey	Exira	Sol Phallis 28606	Trotter
2084	Peter N. Esbeck	Kimballton	Sefton 11640	French Draft
2127	J. C. Hardman	Brayton	Prince 11588	Clydesdale
2129	J. C. Hardman	Brayton	Scotland's Crown 10628	Clydesdale
2390	Richard Fancher	Ross	St. Columba 11427	Clydesdale
2128	C. Ward	Exira	Scotland's Hero 10629	Clydesdale
2497	Amos Fancher	Ross	Rattler 11214	Clydesdale
2498	S. L. Mantz	Audubon	Fernando 45091 (57896)	Percheron
2604	Jacob Layland	Audubon	Prince Albert 15455	French Draft
2850	Jas. L. Johnson	Exira	Jouteur 29567 (45690)	Percheron
2849	Jas. L. Johnson	Exira	Pastel 41404 (60075)	Percheron
2872	F. O. Niklason	Audubon	Early Union 41555	Trotter
2871	F. O. Niklason	Audubon	King Standette 41388	Trotter
3014	S. S. Wilson	Audubon	Ambulant 3895	German Coach
3340	John Cameron	Audubon	Buster Brown 45297	Percheron
3533	Wm. Layland	Audubon	Major III 7440	Shire

BENTON COUNTY

185	W. A. Robison	Urbana	Aesop 27805	Trotter
469	John Scolle	Norway	Alexiev 12490	French Draft
638	Chas. Henning	Keystone	Casimir 24729 (44663)	Percheron
628	Rene Horse Co.	Blairstown	Rene 31138 (46669)	Percheron
761	Wm. Thiessen	Keystone	General 2019 (30118)	Belgian
702	David Spurgeon	Shellsburg	Koubo 1109	French Coach
1089	Ellingson & Tow	Norway	Quandum 2007	French Coach
1122	Keystone Belgian Horse Co.	Keystone	Buron 1153 (18164)	Belgian
1172	Jos. Schmuecker	Watkins	Beach Insurgent Vol 24	Shire
1269	I. N. Compton	Belle Plaine	Vidocq 10283	French Draft
1293	John Frese	Norway	Chareaubriand 11281 (20037)	Percheron
1497	Ellingson & Tow	Norway	Hardi (22648)	Belgian

BENTON COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
582	Richard Pickart	Norway	Bucephale de Ninove 1618 (24956)	Belgian
1638	Luzerne Belgian Horse Co.	Luzerne	Oran 1399 (21626)	Belgian
2263	J. R. Patten	Vinton	Star Counsellor 35936	Trotter
2341	Mt. Auburn Horse Co.	Vinton	Go-Ahead 7354 (Vol. 26)	Shire
2389	J. T. Cameron	Vinton	Bolivar 40111 (46462)	Percheron
2480	L. L. Johnson	Vinton	Bernard J. 45624	Percheron
2481	L. L. Johnson	Vinton	Poppleton 45625	Percheron
2503	Eden Township Horse Co.	Van Horn	Gordon de Lierde (25438)	Belgian
2659	C. A. Burris	Garrison	Joe Briselain 38221	Trotter
2660	C. A. Burris	Garrison	Garrison Reaper 44040	Trotter
2200	Wm. Rabe	Keystone	Cambrinus de Lierde 2589 (34388)	Belgian
2264	George & Ross Johnson	Vinton	Masterpiece 29732	Belgian
2465	W. H. Thiessen	Keystone	Moree II 28856	Percheron
2740	W. J. Mullin	Aredale	Travailleur 22656 (45430)	Percheron
2764	F. L. Thompson	Van Horn	Berenice 46035 (60385)	Percheron
2765	F. L. Thompson	Van Horn	Actif 41695 (64674)	Percheron
2766	F. L. Thompson	Van Horn	Mourzouk 2040 (Vol. 12, p. 425)	Belgian
2767	F. L. Thompson	Van Horn	Bazel 39368	Trotter
3063	S. L. Johnson	Garrison	Thabor 41007 (60392)	Percheron
3121	Thos. Sellers	Vinton	Cosaque 41846 (62053)	Percheron
3178	Farmers' Percheron Horse Co.	Vinton	Flambard 41506 (52188)	Percheron
2045	Fry Bros. & Richart	Vinton	Alencon 41424 (61660)	Percheron
3278	Vinton Coach Horse Co.	Garrison	Schappandre 2230	French Coach
3671	T. H. Weil	Blairstown	Rene 49286	Percheron
4107	W. F. A. Rabe	Keystone	Colletts Chieftain 9246 (24828)	Shire
1841	I. N. Compton & Geo. Parks	Belle Plaine	Homestead Dignity 5120	Shire
4194	David Roth	Luzerne	Wakefield 6311 (Vol. 23)	Shire
4193	David Roth	Luzerne	Young Regenhald 88 (1554)	Oldenburg Coach
1074	J. C. Stewart, Otto Koopman, Peter N. Kahler & Hessenius	Newhall	Cramptimois 1184 (20380)	Belgian
4436	W. F. Cameron	Vinton	The Connoiseur 47329	Trotter

BLACK HAWK COUNTY

173	C. C. Hahn	Raymond	Faquin 22876 (43778)	Percheron
243	F. J. Schweer	Dunkerton	Captif (44891)	Percheron
221	Jas. Loonan	Waterloo	Bloomer 40589	Percheron
220	Jas. Loonan	Waterloo	Superior 40605	Percheron
182	G. W. Clark	Cedar Falls	Petronius 1249	German Coach
286	E. E. Sage	Waterloo	Gartner 113 (1409)	Oldenburg Coach
7	K. E. Penney	Cedar Falls	Airoo 31861	Trotter
478	W. D. Strayer	Waterloo	Magor 26953	Percheron
477	W. D. Strayer	Waterloo	Gabels Hopeful 5785 (18029)	Shire
618	C. F. Horse Importing Co.	Cedar Falls	Richard 8th 7574	Clydesdale
617	C. F. Horse Importing Co.	Cedar Falls	Coquet de Herck 1545 (25466)	Belgian
615	C. F. Horse Importing Co.	Cedar Falls	Headlight 5604	Shire
774	C. A. Hayzlett	La Porte City	Tommy Brown 5128	Morgan
1063	W. S. Brecunier	Waterloo	Mascot 2021	Shetland Pony
1038	O. A. Jensen	Dunkerton	Don Pedro 22992	Percheron

BLACK HAWK COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1014	Chas. & Ed Walter	Finchford	King Gothard 14218	French Draft
1129	Black Hawk Horse Co.	Waterloo	Colin 27082 (48364)	Percheron
1155	H. W. Miller	R. 1, Waterloo	EclipseD'Oplinter(12538)	Belgian
1416	C. E. Hearst	Cedar Falls	Gold Crown 10035	Clydesdale
1456	Henry Thompson	Cedar Falls	Keota Charming Gift 11160	Clydesdale
1581	Joseph Harn	Dunkerton	Regulateur 25027 (43441)	Percheron
1789	Jas. Loonan	Waterloo	Gilbert 43548	Percheron
1787	Jas. Loonan	Waterloo	Vanvert 41724	Percheron
1991	Wm. Crownover	Hudson	Flascoe 46220	Percheron
1990	Wm. Crownover	Hudson	Sound Currency 8639	Shire
1989	Wm. Crownover	Hudson	Matchless 8340	Shire
128	A. T. Kline	La Porte City	Toneham Laddie 5393 (17041)	Shire
2556	Wm. Blowers	Waterloo	Lord Finley 43576	Trotter
2557	Wm. Blowers	Waterloo	Velox R. 43574	Trotter
2558	Wm. Blowers	Waterloo	Latier F. 43575	Trotter
2559	Wm. Blowers	Waterloo	Extelle 26839	Trotter
2560	Wm. Blowers	Waterloo	Camden W. 36231	Trotter
2561	Wm. Blowers	Waterloo	Allertonian 36131	Trotter
2900	M. J. Magee	Dunkerton	Marquis De Warelles 2244 (33608)	Belgian
3355	Nils Hansen & Sofus Larson	Hudson	Porcaro 15245	French Draft
3391	Joe McLaughlin	Waterloo	Directum Centlivre 45440	Trotter
3542	Jacob Hansen	Cedar Falls	Prince of Denmark 40817	Trotter
3740	Wm. Crownover	Hudson	Royal Buster 8641	Shire
3936	Louis Wickkleson	Cedar Falls	Welcome 47972	Percheron
4005	E. R. Douglass	Waterloo	Bolivien 42076 (63855)	Percheron
2474	M. T. Stiles	Cedar Falls	Duncan 20584	Percheron
4058	C. H. Blum	Cedar Falls	Black Hawk Prince 45640	Percheron
4061	S. R. Lampman	Cedar Falls	Utell 22850	Trotter
4042	H. A. Brinker	Waterloo	Monarch 51631	Percheron
3929	M. T. Stiles	Cedar Falls	Red Rob 44135	Trotter

BOONE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
190	J. B. Tremain	Boone	The Idol 36086	Trotter
202	W. B. Donelson	Ogden	Herode de Fosteau 1466 (25494)	Belgian
203	W. B. Donelson	Ogden	Boulet Gouy 1465 (25510)	Belgian
237	G. H. Zimbelman	Boone	Allerston 12862	Trotter
368	Geo. D. Muench	Ogden	Iowa Boy 9285	French Draft
433	J. R. Doran	Beaver	Charmante 14544	French Draft
434	J. R. Doran	Beaver	La Fayette 12050	French Draft
677	N. C. Petty	Pilot Mound	Fitch Dandruff Cure Boy 0901	Trotter
678	N. C. Petty	Pilot Mound	Villebon II 40668	Percheron
679	N. C. Petty	Pilot Mound	Bumper 1865	Belgian
811	S. S. Gilbreath	Pilot Mound	Count Shaw 43072	Trotter
812	S. S. Gilbreath	Pilot Mound	Argus Du Fagot 39434	Belgian
1127	A. W. Williams	Pilot Mound	Keota Spurgeon 27696	Percheron
1470	E. D. Bryant	Madrid	Ostendo 1065 (21594)	Belgian
1492	E. D. Bryant	Madrid	Bismark 13298	French Draft
1547	J. E. Smith	Boone	Illustre 10237	French Draft
1602	Geo. F. & Theo. F. Freie	Ogden	Athos II (919)	Belgian
1617	R. H. Reynoldson	Madrid	Britian Yet 10113	Clydesdale
2112	Clinton McCaskey	Ogden	Flamand 1970 (Vol. 12, p. 555)	Belgian
2146	August Peterson	Madrid	Keota Sharp 27686	Percheron
2182	Geo. Freie	Ogden	Shiloh 46858	Percheron
2190	A. W. Williams	Pilot Mound	Dick 16729	Trotter
2225	Henry J. Lark	Ogden	Edelweise 14658	French Draft
2226	H. J. Lark	Ogden	Budweiser 14660	French Draft
2402	James Neild	Ogden	Colonel 12585	Clydesdale

BOONE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2627	David Welsh	Boone	Delavan 20709	Percheron
2451	Dotlef Harten	Ogden	Derwent Menestrel 6962 (21334)	Shire
193	Husted Osterhandt	Boone	Sir Consul Jr. 28899	Trotter
2708	Husted Osterhandt	Boone	Major Beath 8350	French Draft
2804	Farmers' Draft Horse Co.	Boone	Congo (13468)	Belgian
2866	Geo. W. Colwell	Pilot Mound	Attila 8140 (35812)	French Draft
3301	Treloar Horse Co.	Ogden	Tirailleur 11533 (45113)	French Draft
2231	D. A. Bennett	Berkley	Pierre Le Blanc 43808	Percheron
3937	Neild Bros.	Ogden	Normal Tom 8117	Percheron
3938	Neild Bros.	Ogden	Clayton 8862	Shire
3939	Nield Bros.	Ogden	Kruger 45446	Percheron
4237	Orlow Colwell	Berkley	Serail 51241 (56677)	Percheron
964	O. Colwell	Berkley	Monthlon 10847	French Draft

BREMER COUNTY

158	A. J. Schmit	Minkler	Roosevelt 10343	Clydesdale
159	B. B. Shroes	Janesville	Conquerant 32746 (44954)	Percheron
187	J. H. Carstensen	Tripoli	Carliste 581 (4198)	Belgian
188	J. H. Carstensen	Tripoli	Samson 32977	Percheron
735	George Leyh	Sumner	Marshall Lasnes 31059	Percheron
731	J. J. Lynes	Plainfield	Fred Hudson 5031 4541 Morgan	Trotter
730	J. J. Lynes	Plainfield	Dude 4673	Morgan
1073	F. F. Lynes	Waverly	Keota Barnum 20646	Percheron
1390	C. H. Baskin	Waverly	Robert 26944 (46848)	Percheron
1391	C. H. Baskin	Waverly	Pomard 21275 (43229)	Percheron
1389	C. H. Baskin	Waverly	King William 11524	Clydesdale
2139	Eugene White	Plainfield	Charleagno 25888	Percheron
2515	Percheron Horse Co.	Waverly	Mirliton 46055 (57209)	Percheron
3217	F. H. Baskins	Janesville	Lord Aberdeen 12970	Clydesdale
3691	J. J. Lynes	Plainfield	Dart 5130	Morgan
3965	Jennings Bros.	Janesville	Raley 49418	Percheron
4064	J. W. Teightmeier	Sumner	Charmant (Vol. XI)	Belgian
211	J. W. Teightmeier	Sumner	Beau-Rivage (6022)	French Draft
4261	F. H. Baskins	Janesville	Royal Sady II 12968	Clydesdale
4413	Bert Fry	Plainfield	Sans Peur 2228	French Coach
4414	Bert Fry	Plainfield	Admiral Dewey 3288	Shetland Pony

BUCHANAN COUNTY

363	P. H. Fockler	Independence	Fairfield Buster 7833	Shire
362	P. H. Fockler	Independence	Nig 17816	Percheron
361	P. H. Fockler	Independence	Monarch 5684	Shire
360	P. H. Fockler	Independence	Royal 35357	Percheron
381	D. J. Sensor	Hazleton	Avon A. 40917	Trotter
387	Jas. Netcott	Independence	Red Reaper 39280	Trotter
151	W. H. Miller	Independence	Fusain 42837 (56304)	Percheron
264	T. H. Kimball	Quasqueton	Kermet 35393	Trotter
208	W. M. Molyneaux	Independence	King Greenlander 33775	Trotter
483	Peter Schuster	Jessup	Frivole 31448 (48512)	Percheron
1013	Rowley Draft Horse Co.	Rowley	Archer 28748 (45436)	Percheron
1060	B. E. Robinson	R. 3, Rowley	Drafty Bill 26372	Percheron
1315	L. B. Young	Independence	King Bow Bells 34231	Trotter
1316	L. B. Young	Independence	Reveur 10718	French Draft
1592	E. W. Chessmore & M. P. Kepford	Independence	Victor 11222	French Draft
1768	Fred Retz	Lamont	Ocean 21272 (42903)	Percheron
1820	Geo. B. Winegar	Brandon	Donnell 46107	Percheron
1976	C. H. Jakway	Aurora	Newton J. 41382	Trotter
2228	Aurora Percheron Horse Co.	Aurora	Lepanto 41657 (47428)	Percheron
616	J. J. McBride	Winthrop	Lion de Loncin 1542 (25464)	French Draft

BUCHANAN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3004	A. J. Drake	Hazleton	Darling 41620	Percheron
3020	Winthrop Horse Co.	Winthrop	Marengo 24467 (44400)	Percheron
3352	A. C. Whitcher	Hazleton	Pomard 31444 (45243)	Percheron
3425	A. D. Smith & A. J. Silke	Hazleton	Catalan 16798 (34304)	Percheron
3505	Clarence Wardell	Hazleton	Bob 12473	French Draft
4053	Jas. J. McBride	Winthrop	Enjoue 52365 (62296)	Percheron
2479	J. W. Elliott	Brandon	Remour II 45627	Percheron
4390	T. H. Kimball & J. F. Hekle	Quasqueton	Percheron 35858 (52292)	Percheron
3723	John D. Mahoney	Stanley	Mikado 2698 (41748)	Belgian

BUENA VISTA COUNTY

1	C. E. Cameron	Alta	Look Sir 31562	Trotter
4	J. E. Rudolph	Marathon	Zalfo 34092	Trotter
24	Jas. M. Hoskins	Sioux Rapids	Ole Oleson 35603	Trotter
25	Jas. M. Hoskins	Sioux Rapids	Billy Lee 43177	Trotter
219	Holmes & Kennedy	Alta	Soprano 40393 (45063)	Percheron
201	Bradford & Seeth	Rembrandt	Brutus 21457 (43203)	Percheron
642	J. A. Chindlund	R. No. 3, Alta	Sabinus 13093 (25670)	Percheron
951	Elk Percheron Horse Co.	Alta	Parmentier 32401 (45668)	Percheron
1083	J. M. Haywood	Alta	Satan 1813 (25282)	Belgian
1010	Linn Grove Horse Co.	Linn Grove	Moblot 29499	Percheron
894	David Snyder	Sioux Rapids	Ambassador 5034	Shire
1219	Storm Lake Percheron Horse Co.	Storm Lake	Muscle 34299 (46359)	Percheron
1252	M. Mulvihill, Sr.	Newell	Dewette 1252	Percheron
1261	N. M. Layman	Newell	French Monarch 9353	French Draft
1262	N. M. Layman	Newell	Allside Prince 5621	Shire
1759	Carl P. Hoeg	Newell	Diamond 43300	Percheron
1992	J. T. Norton	Marathon	Zaffre 37099	Trotter
2037	Wm. Woods	Newell	Duke X II 5934 (18689)	Percheron
2196	E. E. Holmes	Marathon	Pompon Jr. 45197	Percheron
2363	Len H. Lamar	Storm Lake	3d Jeweled Prince 10881	Clydesdale
2692	Marathon Shire Horse Co.	Marathon	Gabels Coeur-de-Lion 6961 (Vol. 25)	Shire
2715	Geo. Kestell	Storm Lake	Munger 23794	Percheron
2784	Hayes Shire Horse Co.	Storm Lake	Highland Hero 4940	Shire
2923	Buena Vista Center Percheron Horse Co.	Storm Lake	Baptiste 28163 (47052)	Percheron
3	B. Fultz	Storm Lake	McCaskle 6820	Clydesdale
3358	Storm Lake Belgian Horse Co.	Storm Lake	Ovation 1446 (25314)	Belgian
3538	Webb Coach Horse Co.	Marathon	Samton de Goyer 1275 (17032)	Belgian
3559	Geo. D. Anderson	Newell	Prince Newell 45579	Trotter
3653	H. F. Wellmerling	Rembrandt	Procter 12631	French Draft
4236	J. J. Richardson	Alta	Westonian 41552	Trotter
4418	H. F. Wellmerling	Sioux Rapids	Mouton de Lillois 1781 (17466)	Belgian

BUTLER COUNTY

247	T. J. Watterson	Aredale	Bourdon 7314 (1458)	French Draft
236	Colin Horse Co.	Austinville	Colin 29946 (48454)	Percheron
548	W. J. Feltus	Allison	Prince Perche 20951	Percheron
366	H. C. Miller	Bristow	Major McKinley 826	Belgian
1084	R. W. Webster	Allison	Brown King 26359	Percheron
1072	F. W. Bucholz	Clarksville	Keota Henry 31900	Percheron
1064	Miller & Rogers	Allison	Alcibiade 15877 (22819)	Percheron

BUTLER COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1186	Burt Curtis	Allison	Keota Rambler 27652	Percheron
1359	J. Nevins	Greene	Dude Jr. 43448	Trotter
1827	H. F. Stanton	Greene	Drum Major 25880	Percheron
2332	Chas. & Wm. Tell	Clarksville	Pierre de Pieton 1988 (29746)	Belgian
2413	John Metcalf	Allison	Pompedour 900	Belgian
659	Wedeking Bros. & Co.	Clarksville	Dewey 24585	Percheron
918	M. H. Barnes	Dumont	Guidon (34246)	Belgian
2942	Beaver Grove Horse Co.	New Hartford	Grandee 23212	Percheron
2841	Martin & Burroughs	Clarksville	Romeo II 12551	Clydesdale
3244	M. H. Barnes	Dumont	Sherwin 20975	Trotter
3510	H. A. Boyd	Clarksville	King Kiosk 42251	Trotter
3643	C. A. Iblings	Parkersburg	Onix Vol. 7	Oldenburg Coach
3685	Thea. Buffridge	Greene	Vyzenio 34685	Trotter
3940	Geo. O'Brien	Greene	Warren Miles 43221	Trotter
3958	W. C. Stewart	Clarkesville	Prince Romeo's Heir 12219	Clydesdale
4071	Walter C. Walker	New Hartford	Abilly 51339 (65592)	Percheron
3677	O. J. Early	Bristow	Idol B. 35581	Trotter
494	R. M. Skillen	Greene	Admiral Dewey 6241	Shire

CALHOUN COUNTY

98	J. M. Baker	Jolley	Moustache 24572 (43576)	Percheron
160	Rockwell City Horse Co.	Rockwell City	Monaco 26908	Percheron
261	J. B. Richards	Rockwell City	Baron Lee 36549	Trotter
55	J. M. Furney	Manson	Watchword Junior 35665	Trotter
54	Gingerich & Petrie	Manson	Butor (46127)	Percheron
37	J. M. Baker	Jolley	Rutland Prince 6223	Shire
85	Yetter Belgian Horse Co.	Yetter	Charles Quint 18192	Belgian
411	J. W. Lockie	Pomeroy	Allerco 35459	Trotter
915	W. H. Kent	Manson	Brown Ben 6249	Shire
1021	John Baughmen	Manson	St. Laurent 13509	French Draft
1022	Elsen Bros.	Manson	Mouvement 25593 (44687)	Percheron
1023	Weise & Co.	Manson	Mouton D' Heure 1096 (21096)	Belgian
963	A. A. Wells	Somers	Colonel Berry 33720	Trotter
962	A. A. Wells	Somers	Tic Tac 28141 (44773)	Percheron
1175	J. H. Van Meter	Manson	Ponca Van 39834	Trotter
1176	J. H. Lish	Manson	Dr. Dunkle 40620	Trotter
1179	L. E. Pierce	Rockwell City	Marmotte 26142 (44048)	Percheron
1212	W. Q. Stewart	Rockwell City	Rockwell Boy 41851	Trotter
1436	A. F. Ramthun	Rockwell City	Dogue 43910 (60856)	Percheron
1511	E. S. Carmean	Lake City	Surprise 25300	Percheron
1648	Pomeroy Horse Co.	Pomeroy	Citadin (48476)	Percheron
1649	John Doyle	Pomeroy	Custine 6587 (9970)	Percheron
1753	O. H. Snyder	Manson	Black Reaper 43314	Percheron
1754	O. H. Snyder	Manson	Victor 24008 (44560)	Percheron
1779	Knierim Belgian Horse Co.	Knierim	Daniel 1182 (17830)	Belgian
2124	A. M. Pierce	Rockwell City	Dauphin 2346 (30648)	Belgian
2385	J. H. Hildreth	Rockwell City	Bedwell Tom 8435 (22102)	Shire
2511	J. W. Brayton	Rockwell City	Lake City Matchless 7288	Shire
2517	Lake City Percheron Horse Co.	Lake City	Emery 33740 (46207)	Percheron
2539	F. W. Arney	Lake City	Prince Model 44268	Percheron
2540	F. W. Arney	Lake City	Tom Tom 44269	Percheron
2541	F. W. Arney	Lake City	Scarabe's Model 43701	Percheron
2542	F. W. Arney	Lake City	Togo 44270	Percheron
2855	Hutchinson & Jacobs Lake City Horse Co.	Lake City	Tacticien 2481	French Coach

CALHOUN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2887	J. E. Barr & Wm. Winkleman	Lohrville	Pepin De Leernes 1756 (21650)	Belgian
2906	W. D. Pittman	Lake City	Mahomet Royalist 4861	Shire
2905	W. D. Pittman	Lake City	Eden Chief 8712 (19580)	Shire
2904	W. D. Pittman	Lake City	Mahomet Boaz 4928	Shire
1020	Nordhausen & Schmidt	Manson	Waterloo 12661	French Draft
3229	George Moss & Cain & Son	Lohrville	Llynelys Ladd 7098 (17450)	Shire
3299	C. W. Titus & Son	Yetter	Pink Major 43927	Percheron
3468	Smiley Francis	Jolley	Colonel 32306 (44313)	Percheron
3469	Smiley Francis	Jolley	Keota Sorrento 27693	Percheron
3614	John Knoke & Geo. Baskervell	Bristol	Bristol de Lange 2514 (32962)	Belgian
3661	W. D. Pittman	Lake City	Boaz II 9090	Shire
4062	John Doan	Rockwell City	Black Frenchman 11643	French Draft
4083	J. W. Brayton	Rockwell City	Diaz 45550	Percheron
4241	Lent & Petrie	Manson	Saxwood 31794	Trotter
4288	H. G. Fillenworth	Rockwell City	Doctor Sennett 25423	Trotter
4303	Garrett & Hudson	Lohrville	Major III 45591	Percheron
2743	J. P. Hammond	Jolley	Regent 27845 (43562)	Percheron

CARROLL COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
32	J. Coder	Glidden	Red Wallace 22369	Trotter
29	Henry Torpy	Manning	Brilliant 1849	Belgian
810	Jos. Wilson	Manning	Bolibar 19335	Percheron
1245	Wm. Heuton	Glidden	Tobe II 746	French Draft
1246	Wm. Heuton	Glidden	Docelle 1246	Percheron
1562	Julian Township Horse Co.	Coon Rapids	Hercule De Courtrai 1439 (25364)	Belgian
1639	Wm. Rupiper	Carroll	Malborough 830 (13010)	Belgian
1690	Henry George	Coon Rapids	What You Want Jr 29165	Percheron
1695	L W. Schumacher	Carroll	La Fleur 10900	French Draft
65	Wm. Wiese	Manning	Diemede 18548	Percheron
2227	Herman F. Von Glan	Breda	Grison (28932)	Belgian
2661	A. Kessler	Carroll	Moltka 39075	Trotter
2684	Hy Dammann	Manning	Coriza 41830 (56193)	Percheron
2446	A. E. Bolton	Glidden	Regent II 10843	French Draft
2543	H. E. Brown	Coon Rapids	Bertrand 12582	Percheron
2741	Lefingwell Horse Co.	Glidden	Cedar 27303 (45840)	Percheron
2798	R. S. Keat	Manning	Faro de Rotheaux 2428 (Vol. 12, p. 484)	Belgian
2799	D. P. Copp	Carroll	Carnot (13561)	Percheron
2809	Phillip Schleisman	Carroll	Croquemitaine (52402)	Percheron
1466	Mike Fritz	Arcadia	Grandini 21988 (42783)	Percheron
2869	T. M. Campbell	Coon Rapids	Nobility 231	Suffolk
2903	Manning Norman Horse Co.	Manning	Conqueror 9107	French Draft
3308	C. H. Johnson	Glidden	Demus 43616	Percheron
3307	Glidden Horse Co.	Glidden	Chapeau 31437 (48688)	Percheron
3446	Geo. M. Schumacher	Carroll	Rohan 15856	French Draft
3518	John H. Ginn	Glidden	Benour 21956	Trotter
2171	David Ferguson	Carroll	Porus 11943 (5979)	French Draft
330	Henry Moeller	Manning	Allison 20290	Percheron
4054	Stork & Vonnahme	Breda	Rattler Yet 10810	Clydesdale
2877	Roscoe Bros	Carroll	Riposteur 27422 (44782)	Percheron
4242	W. J. Johnston	Coon Rapids	Juneau 21142	Percheron
4253	Eischeid & Potthoff	Halbur	Sultan 47715	Percheron
4387	J. H. Kohorst	Acadia	Claudius 27617	Percheron

CASS COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
520	A. P. Cuykendall	Atlantic	Westside Referee 250	Suffolk
348	Chas. Denne	Atlantic	Ciceron 31105 (46917)	Percheron
224	Caledonia Shire Horse Co.	Griswold	Stuntney Zephyr 8366 (22841)	Shire
179	A. P. Cuykendall	Atlantic	West Side Sultan 230	Suffolk
241	J. H. Schofield & Oliver Manison	Griswold	Colosse 12458	French Draft
272	J. P. Brunner	Griswold	Rex 1591 (1618)	German Coach
284	Alex Dallas	Atlantic	Peter Kane 36969	Trotter
583	R. A. Berry	Atlantic	Knottinglet Referee (22501)	Shire
651	Turner Bros	Griswold	Prince B. 10731	Clydesdale
650	Turner Bros	Griswold	Major P. 11233	Clydesdale
608	Perry Woods	Marne	Green Mountain Boy	Morgan
607	Perry Woods	Marne	Banqueter 38881	Trotter
412	Anita Horse Co	Anita	Merrimac 11952	Clydesdale
766	J. A. Nelson	Atlantic	Lusnonnais 40874 (55255)	Percheron
739	Geo. C. Lindeman	Lewis	Banker Boy 21153	Percheron
831	Ray McClintock	Griswold	Archie Greenlander 38704	Trotter
1062	E. D. Ruff	Atlantic	Pat King 35906	Trotter
878	Fred Lassen	Atlantic	Captaine (51649)	Percheron
1156	G. E. McDermott	Anita	Napoleon Boy 45204	Percheron
1215	J. F. Gissibl	Anita	Defender's Best 11646	Clydesdale
1214	Alfred Bailey	Anita	The Master of Stair 11607	Clydesdale
1213	Alfred Baiely	Anita	Laird of Anita 12157	Clydesdale
1229	Wm. Hopley	Atlantic	Orlando (20785)	Shire
1396	Peter Biggs	Anita	Plough Boy II 5135	Shire
1423	Watt Devore	Massena	Luzignan 21778 (43899)	Percheron
1538	W. B. Berry	Atlantic	Stuntney Blake II 6652 (20061)	Shire
1597	F. H. & M. O. Trailer	Marne	Northolme Gipsey King 8197 (22639)	Shire
1781	M. L. Northrop	Lewis	Joe Bailey 8003	Shire
2101	Caledonia Belgian Horse Co.	Griswold	Tudor II 2572 (29482)	Belgian
78	S. L. Harrison	Marne	Conway Brilliant 904	Belgian
2298	Geo. Smith	Atlantic	Beecher 14292	French Draft
2444	E. F. Moon	Atlantic	Young Hylas 43703	Trotter
2449	Frank Ruchs	Massena	Julius 2529 (33670)	Belgian
2582	H. C. Wohlenhaus	Griswold	Bouvois 41876	Percheron
2698	Otto Lassen	Cumberland	Roy 7859	Shire
2718	Cheney & Bell	Massena	Montekuma 34968	Trotter
2719	Cheney & Bell	Massena	Royston Prince 11635	French Draft
2720	Cheney & Bell	Massena	Herault 14972	French Draft
2721	Cheney & Bell	Massena	Orlando 42842	Percheron
2771	V. B. Mayberry	Atlantic	Leloir 41835 (54790)	Percheron
2781	Wm. Toepfer	Atlantic	Patriote 27823 (44454)	Percheron
697	Colwell & Brown	Atlantic	Bishop Jr. 38199	Trotter
1149	James Duncan	Atlantic	Duke of Creston 10949	French Draft
2984	Gene Pierce	Cumberland	Oriola 1567	German Coach
3109	Peter Hopley & Son	Lewis	Janus 3899	German Coach
3106	A. R. Brown	Anita	Baba 41824 (60746)	Percheron
3224	Wilson Bros.	Anita	Prince Kirtlebridge 9221	Clydesdale
3246	Fred Steinke	Atlantic	Prince L. 2606	Shetland Pony
3452	G. J. Pellett	Atlantic	Noxall R. 0565	Trotter
3640	M. O. Trailer	Marne	Harold Melrose 15274	Thoroughbred
3642	W. M. Burnside	Lewis	Lumps 27290	Trotter
3862	M. A. Bell	Atlantic	Leslie Farghar 42555	Trotter
1274	W. H. Mauk	Lewis	Greviste 30617 (43717)	Percheron
4272	A. Caywood	Cumberland	Buffalo Bill 2406 (37402)	Belgian
4273	A. Caywood	Cumberland	Gay 20787	Percheron
2721	E. A. Taylor	Anita	Orlando 42842	Percheron
4319	G. E. Eshelman	Griswold	Stuntney Royal Don 5748	Shire
2697	Metz Bros.	Anita	Piston 2414 (37398)	Belgian
2725	Hansen Bros.	Anita	Happy Thought 11761	Clydesdale
1181	H. G. Highley	Anita	Moulton Sir Peter (22957)	Shire
738	Emil Rabe	Griswold	Black Prince 21415	Percheron

CEDAR COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
390	Wm. Gray	Mechanicsville	Sandscale Mafeking 7111 (19100)	Shire
391	Wm. Gray	Mechanicsville	I. D. 36221	Trotter
218	Downey Draft Horse Co.	Downey	Negrillon 26105 (54340)	Percheron
323	F. M. Emerson	Clarence	King Richard 5975	Shire
545	A. J. Sawyer	West Branch	Maple Dick 12917	French Draft
563	F. W. Eilers	Tipton	Jim Corbet Jr. 7387	Shire
720	J. J. Jackson	Mechanicsville	Howard Black 38488	Trotter
857	Jno. Willer, Jr	Tipton	Tipton Major 5454	Shire
832	Sam McAfee	Mechanicsville	Delamere Combination 7357 (1672)	Shire
870	C. E. Kohl	Mechanicsville	Horbling Field Marshal 7112 (18814)	Shire
1162	Glen Linden Shire Horse Co.	Stanwood	Blaisdon Vulcan 7113 (18529)	Shire
1217	B. Kook	Durant	Pleasant Hill King 26380	Percheron
1218	B. Kook	Durant	Albert 32350 (48157)	Percheron
1233	Rustique Horse Co.	Stanwood	Rustique 27152 (48366)	Percheron
1491	Leander Horse Co	West Branch	Leander 12450	French Draft
1478	Chas. Mason	Tipton	Cephas 10771	Trotter
2166	A. J. Glick	Clarence	Glick's Plunger 41589	Percheron
2179	O. R. Glick	Clarence	Auctioneer 30234	Percheron
2975	C. L. & C. D. Peck	Mechanicsville	Winton Duke 2975	Shire
3136	F. M. Gray	West Branch	Old Tar 15701	French Draft
3135	F. M. Gray	West Branch	Billy J. Bryan 15702	French Draft
3324	C. L. McClellan	Lowden	Farceur 9247 (6426)	Percheron
3323	C. L. McClellan	Lowden	Bright Gamaleon 44187	Trotter
3314	W. S. Spears	Stanwood	Farmers Profit 7106	Shire
3396	Fred Schmidt	Clarence	Sergent 27189 (44292)	Percheron
3395	Mechanicsville Percheron Horse Co.	Mechanicsville	Clenenceau 31247 (48713)	Percheron
3668	H. S. Hoyman & Son	Stanwood	Acelyte 41375 (54915)	Percheron
3683	Duane Rigby	Mechanicsville	Tipton 41117	Percheron
4302	L. P. Yocum & Son	Clarence	Red Amber 44098	Trotter
4347	Downey Draft Horse Co.	Downey	Sebatier 50766 (64448)	Percheron
4365	Chas. W. De Camp	Tipton	Taylor the Great 47101	Trotter

CERRO GORDO COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
578	C. H. Merchant	Mason City	Sir George 2736	Shire
579	C. H. Merchant	Mason City	Victor M. 8386	Shire
580	C. H. Merchant	Mason City	Maxmillion 7744	Shire
690	Neils Brown	Thornton	Caesar 27831 (48382)	Percheron
1580	A. M. Avery	Mason City	Abe Lincoln 8400	Shire
1627	P. Murphy	Dougherty	Beauregard 40407	Percheron
1646	James Ferrier	Mason City	Pipestone Bill 41406	Percheron
1679	Wetter, Latimer, Crotty Horse Co.	Rockwell	Bolero 40391 (56734)	Percheron
1756	C. Bryant	Mason City	Connaught 2779	Shire
2286	L. G. Parker	Mason City	Rex 50294	Percheron
2287	L. G. Parker	Mason City	Rouser 35826	Percheron
2313	Robt. Carr	Mason City	Robert Patch 41405	Trotter
2314	Robt. Carr	Mason City	Barondean 36317	Trotter
2415	L. G. Parker	Mason City	Peer 40418	Percheron
2830	Rockwell Horse Co.	Rockwell	Clos Vougeot 2203 (33310)	Belgian
1335	T. B. Morse	Rock Falls	Keota Narragansett (31881)	Percheron
3094	Paul Bros.	Thornton	Calleo 42180	Trotter
3093	August Hanson & Paul Bros	Thornton	Renouveau 1063 (21582)	Belgian
3337	C. M. Baker	Mason City	Frank 9523	French Draft

CERRO GORDO COUNTY—CONTINTED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3335	Van Note Bros	Mason City	Armour 42035	Percheron
3334	Van Note Bros	Mason City	Buster Brown 44364	Percheron
3672	T. M. Dresbach	Mason City	Reno 48783	Percheron
4118	Fred Ebanit	Meservy	Mountain 40688	Percheron
4246	Mason City Burchinal & Rockwell Belgian Horse Co.	Rockwell	Cognac de Bovesse 1451 (25332)	Belgian
4383	Grant McGowan	Mason City	Decided 30182	Percheron
4384	Grant McGowan	Mason City	Win 51627	Percheron
4385	Grant McGowan	Mason City	Right 51626	Percheron
4386	Grant McGowan	Mason City	Prize 51625	Percheron

CHEROKEE COUNTY

157	J. J. Richardson	Marcus	Bloc 24705	Percheron
1819	F. W. & C. B. Peck	Cherokee	Sultan 44330 (56244)	Percheron
2143	F. F. Lowell	Larrabee	Baccarat 20398	Percheron
2168	Maple Valley Belgian Horse Co.	Aurelia	Marquis de Wytschacte 482 (25416)	Belgian
2191	C. P. Spinharney	Cherokee	Moquart 1352 (16790)	Belgian
2192	C. P. Spinharney	Cherokee	Polo 44135 (51875)	Percheron
2194	John Soukup	Marcus	Cadet de Mouchon 1750 (23852)	Belgian
2197	W. J. Dawson	Washta	Pichegru 13035 (51163)P.	French Draft
2404	W. P. Green	Washta	Farmers Profit 27915	Percheron
2551	G. W. Harrison	Washta	Walpole 24554	Trotter
2552	G. W. Harrison	Washta	Mongout 27375 (44592)	Percheron
2783	T. E. Linton	Aurelia	Branchwood 24164	Trotter
2796	L. H. Ducommun	Cleghorn	Brilliant List 47328	Percheron
2963	J. A. Kelly	Larrabee	Malmaison 41864	Percheron
3005	Geo. Hirschman	Marcus	Saphir 32834 (46498)	Percheron
3006	Fred Furkly	Marcus	Corbon 33056	Percheron
3007	E. V. Ferrin	Marcus	Gold Bug 21127	Percheron
3105	Cleghorn Horse Co.	Cleghorn	Cambodge 29492 (44914)	Percheron
3114	W. P. Green	Washta	Chalet 40672 (55519)	Percheron
3558	P. L. Draper	Larrabee	Carnaval 2107 (29872)	Belgian
3637	Geo. Bower	Cherokee	Sans-Facon 32333 (46882)	Percheron
4043	S. G. Dawson	Washta	Sandy 46213	Percheron
4291	G. W. Brown	Marcus	Mouton 46707	Percheron
4265	L. M. Miller	Marcus	Tassin 33850 (45149)	Percheron
4131	A. A. Goodburn	Marcus	Almond 25317	Percheron
4149	Geo. Lockwood	Cherokee	Major B. 48091	Percheron

CHICKASAW COUNTY

487	F. P. Shekleton	Lawler	Matchless McKinley 11798	Clydesdale
486	F. P. Shekleton	Lawler	John Lawler 11797	Clydesdale
485	F. P. Shekleton	Lawler	Newton Masher 7654	Shire
484	F. P. Shekleton	Lawler	Rockwell 19843	Percheron
576	W. S. Thorn	Fredericksburg	Faor 33136	Percheron
94	Gilbert Touney	Lawler	Roy Benton 8368	Shire
108	W. B. Porter	New Hampton	Boyer 10522	Trotter
283	North Washington Horse Co.	No. Washington	Tiflis 23227 (41397)	Percheron
2	L. C. Goodsell	Nashua	Sesostris 27871 (43661)	Percheron
426	Bassett Percheron Horse Co.	New Hampton	Rejoni 45011	Percheron
629	X. F. Mishak	Ionia	Farmer 10119	Clydesdale
757	P. M. Smith	Ionia	King 12856	Percheron
719	Smith Bros	Fredericksburg	Sherman 22339	Percheron
914	J. F. Cagley	Nashua	Billy M. 5113	Morgan
1080	Dan Hickok	Ionia	Ralock 43241	Trotter

CHICKASAW COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1088	M. B. Farr	Nashua	Obus 27803 (43548)	Percheron
1046	Alex Shekleton	Lawler	Cedric MacNeil 10049	Clydesdale
1257	New Hampton Belgian Horse Co.	New Hampton	Beduoin 1256 (23802)	Belgian
1224	Mike Whalen	Jerico	Lapin (58301)	Percheron
1225	Mike Whalen	Jerico	Bangala 856 (11890)	Belgian
1399	S. A. Shekleton	Lawler	Sable Prince 11300	Clydesdale
1400	S. A. Shekleton	Lawler	Prince Telectable 11831	Clydesdale
1378	C. F. McNevin	Lawler	Rob McNevins 34289	Trotter
2219	Otto Koerth	Ionia	Russell Ago 44463	Trotter
1498	F. P. Shekleton	Lawler	Wm. McKinley 12372	Clydesdale
1499	F. P. Shekleton	Lawler	Black Major II 45437	Percheron
1734	X. F. Mishak	Ionia	Francois II 40111	Percheron
1750	Frank Leightman	New Hampton	Gamzoo 34363	Trotter
1837	James Ramsey	Lawler	Silver Royal 43539	Trotter
2237	F. P. Shekleton	Lawler	Robin Rant 14645	French Draft
2236	F. P. Shekleton	Lawler	De Soto 47227	Percheron
2265	X. F. Mishak	Ionia	Fleuris 14845 (61659)P	French Draft
2782	J. T. Huffman	Ionia	Nedrow 41809	Percheron
2838	Jno. Clemens & Co.	New Hampton	Ray Westfall 9651	Clydesdale
2902	Thos. H. Smith	Lawler	Mac Niven 8655	Clydesdale
3129	S. E. Johnson	New Hampton	Clapet 11050	Percheron
3143	F. P. Shekleton	Lawler	Prince Discoverer 9746	Clydesdale
3142	F. P. Shekleton	Lawler	Crouse 47105	Percheron
3141	F. P. Shekleton	Lawler	Quarius 43267	Percheron
3190	L. B. Scales	Nashua	Donshaw 35979	Trotter
3194	R. W. Donovan	Lawler	Billy Bryan 13135	Clydesdale
3210	J. R. Whitcomb	Fredericksburg	D'Aplomb 21604 (43071)	Percheron
3282	Frank P. Shekleton	Lawler	Baron Doune 12613 (13254)	Clydesdale
1947	Peter Birgen	New Hampton	Aristide 50502 (64237)	Percheron
3464	J. R. Hickok	Ionia	Coran 2344 (32554)	Belgian
3545	New Hampton Horse Co.	New Hampton	Sethos 24654 (43657)	Percheron
3570	C. E. Sullivan	Fredericksburg	Cecil Twig 42112	Trotter
360	J. W. Pierce	Republic	Conway Albert 923	Belgian
3602	J. W. Pierce	Republic	Vigeroux 41168	Percheron
3662	Frank P. Shekleton	Lawler	Trojan 49404	Percheron
3663	Frank P. Shekleton	Lawler	Barney's Chief 10848	Clydesdale
1936	Alta Vista Draft Horse Improvement Co.	Alta Vista	Pothuau 50548 (62463)	Percheron
4087	X. F. Mishak	Ionia	Der Captain 4645	German Coach
1305	J. T. Huffman	Ionia	Prince Hilton 40795	Percheron
1898	Peter Birgen	New Hampton	Turner (2155)	Holstein Coach
4230	Fredericksburg Shire Horse Co.	Fredericksburg	Kendal Budgeon 6514 (Vol. 24)	Shire
1689	F. P. Wentz	New Hampton	Trojan 31389	Percheron
4489	Miller & Kenyon	New Hampton	Mark Del 24914	Trotter

CLARKE COUNTY

156	J. A. & A. A. Carson	Woodburn	Bardolph 13566	French Draft
234	Hart Bros	Osceola	Hampfield Samson 7153	Shire
213	A. H. Griffin	Osceola	Martello 17988 (37247)	Percheron
459	Murray Percheron Horse Co	Murray	Makir 28441 (46877)	Percheron
38	Charles Swick	Osceola	Hoverton Iron Duke 13366	French Draft
440	Thos. Johnson	Murray	Doctor D. 41505	Trotter
669	W. G. Hindes	Murray	The Spartan 34175	Trotter
682	Hart Bros.	Osceola	Vincennes 50195 (59558)	Percheron
681	Hart Bros	Osceola	Ducal 50194 (60035)	Percheron
413	Milton L. Evans	Murray	Cenright 6966	Clydesdale
1071	Lewis Bros	Osceola	The Black Prince 9345	Clydesdale

CLARKE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1096	G. C. Lucas	Hopeville	Walter J. 20225	Trotter
1135	G. P. Rhodes	Woodburn	Caro (Vol. 7)	Oldenburg Coach
1684	David Mitchell	Murray	Teddy Roosevelt 1067	Belgian
1685	David Mitchell	Murray	Duke 5002	Shire
1800	Hart Bros	Osceola	Ducal 50311	Percheron
1816	Hart Bros	Osceola	Abbot 50387	Percheron
1815	Hart Bros	Osceola	Joe-Banker 50386	Percheron
1829	Hart Bros	Osceola	Joseph the Banker 8647	Shire
1862	Hart Bros	Osceola	Roublard 50436 (62775)	Percheron
1844	Hart Bros	Osceola	Joe Bailey 50886	Percheron
1845	Hart Bros	Osceola	Spark 50289	Percheron
1846	Hart Bros	Osceola	Du-Rock 50312	Percheron
1847	Hart Bros	Osceola	Victor Gilbert 50621	Percheron
1848	Hart Bros	Osceola	Ralph 50253	Percheron
1849	Hart Bros	Osceola	Jerry Johnson 50252	Percheron
1850	Hart Bros	Osceola	Hempfield Samson 50250	Percheron
1851	Hart Bros	Osceola	Ducal 50674	Percheron
1852	Hart Bros	Osceola	Rataplan 50620 (60462)	Percheron
1853	Hart Bros	Osceola	Mulot 50834 (53778)	Percheron
1854	Hart Bros	Osceola	Cattu 50424 (51569)	Percheron
1855	Hart Bros	Osceola	Granit 50427 (61873)	Percheron
1857	Hart Bros	Osceola	Panquert 50435 (55255)	Percheron
1858	Hart Bros	Osceola	Souaze 50437 (64787)	Percheron
1859	Hart Bros	Osceola	Maubert 50431 (57853)	Percheron
1860	Hart Bros	Osceola	Mosnil 50432 (55589)	Percheron
1861	Hart Bros	Osceola	Mastique 50430 (64774)	Percheron
2001	Hart Bros	Osceola	Slather 8396	Shire
2002	Hart Bros	Osceola	Osceola Sampson 8695	Shire
2003	Hart Bros	Osceola	Champion 50287	Percheron
2004	Hart Bros	Osceola	Spring-Up 50703	Percheron
2005	Hart Bros	Osceola	Senitor 50702	Percheron
2031	Hart Bros	Osceola	Tableau de Aspe 2378 (29916)	Belgian
2032	Hart Bros	Osceola	Slasher 50288	Percheron
2033	Hart Bros	Osceola	Victor-Gilbert 50730	Percheron
2034	Hart Bros	Osceola	Ferry Oak 8441 (23918)	Shire
2085	Hart Bros	Osceola	Osceola Banker 50746	Percheron
2086	Hart Bros	Osceola	Osceola Boy 50747	Percheron
2103	S. S. Critchfield	Woodburn	Balandard 22664 (42798)	Percheron
2121	Hart Bros	Osceola	Jerry Johnson 12218	French Draft
680	Robinson & Griffin	Osceola	Aloes 50217 (55899)	Percheron
1057	David Mitchell	Murray	Jim Jam 32838	Percheron
2214	Hart Bros	Osceola	Lucky Lad of Town's End 898 (9329)	Hackney
2216	Hart Bros	Osceola	Royal II 7085	Shire
2215	Hart Bros	Osceola	Ralph 50819	Percheron
2248	Hines Bros	Murray	Osceola Rampton 8852	Shire
2277	Hart Bros	Osceola	Durock 50203	Percheron
2291	Wm. Ritchie, Ed Husted & J. B. Hazlett	Murray	Feramorz 12594	French Draft
2368	Hart Bros	Osceola	Stuntney George 8860 (24653)	Shire
2369	Hart Bros	Osceola	Stuntney Shem 8861 (22835)	Shire
2370	Hart Bros	Osceola	Mistral 50890 (62275)	Percheron
2371	Hart Bros	Osceola	Beatrix 50882 (62373)	Percheron
2373	Hart Bros	Osceola	Dartagnon 50866 (60097)	Percheron
2374	Hart Bros	Osceola	Xavier 50895 (61805)	Percheron
2375	Hart Bros	Osceola	Biffin 50884 (53737)	Percheron
2376	Hart Bros	Osceola	Raab 50893 (58383)	Percheron
2377	Hart Bros	Osceola	Turenne 50897 (58865)	Percheron
2378	Hart Bros	Osceola	Python 50892 (60409)	Percheron
2379	Hart Bros	Osceola	Affuteur 50881 (64666)	Percheron
2380	Hart Bros	Osceola	Benjamin 50883 (54566)	Percheron
2381	Hart Bros	Osceola	Damier 50885 (64212)	Percheron
2382	Hart Bros	Osceola	Domino 50887 (64195)	Percheron
2383	Hart Bros	Osceola	Horoff 50889 (60458)	Percheron
2384	D. B. Hedge	Osceola	Mogol 50891 (62665)	Percheron
2622	E. C. Staley	Osceola	Loyalty 11978	French Draft
2702	C. B. Shinn	Osceola	Conway Prince 978	Belgian
2811	Clark Co. Horse Co.	Osceola	Courgeon 24268 (44031)	Percheron
3059	J. E. Perry	Osceola	Zulman 12368 (5957B)	French Draft
3149	Hart Bros	Osceola	Banker 50980	Percheron

CLARKE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3148	Hart Bros	Osceola	Banker Joseph 9021	Shire
3147	Hart Bros	Osceola	Harts Thumper 9020	Shire
3256	J. A. Voris	Woodburn	Hobson 9734	French Draft
3257	J. A. Voris	Woodburn	Iowa 5452	Shire
3266	Hart Bros	Osceola	Planquin 51035 (58803)	Percheron
3267	Hart Bros	Osceola	Francillon 51028 (62562)	Percheron
3268	Hart Bros	Osceola	Busserre 51027 (62238)	Percheron
3269	Hart Bros	Osceola	Jupiter 51031 (56613)	Percheron
3270	Hart Bros	Osceola	Riflard 51036 (62337)	Percheron
3271	Hart Bros	Osceola	Turbigo 51038 (56820)	Percheron
3272	Hart Bros	Osceola	Guignol 51030 (63699)	Percheron
3273	Hart Bros	Osceola	Fripon 51029 (51263)	Percheron
3274	Hart Bros	Osceola	Limier 51032 (62294)	Percheron
3275	Hart Bros	Osceola	Orphelin 51034 (60869)	Percheron
3276	Hart Bros	Osceola	Marescot 51033 (62809)	Percheron
3311	Hart Bros	Osceola	Sultan de Thy 2624 (34638)	Percheron
3310	Hart Bros	Osceola	Neron d' Ormei 2663 (20794)	Percheron
3369	Hart Bros	Osceola	Grimaud 41197 (60489)	Percheron
3381	Hart Bros	Osceola	Camille 51026 (58952)	Percheron
3526	J. E. Reese & J. W. Kent	Woodburn	Coco 8826	French Draft
3547	Baldwin, Reed & Ayers	Osceola	Robo 11944 (5966)	French Draft
3675	Hart Bros	Osceola	Hero-Ben 51086	Percheron
3852	Sinnott & Forney	Osceola	Kernal 52062	Percheron
3897	C. T. Ayers	Osceola	Caten 49509	Percheron
4002	R. B. Bartlett	Hopeville	Norwood Brilliant 49330	Percheron
3437	Milton Evans	Murray	Eavineer 33054	Trotter
3921	E. G. Paul	Osceola	Powerful 40993	Percheron
4137	Hart Bros	Osceola	Marengo 51439 (67312)	Percheron
4136	Hart Bros	Osceola	Marnix de Destel 2894 (41522)	Belgian
4195	J. G. Carns	Murray	Sampson 51513	Percheron
439	Roy Sink	Hopeville	Colonel Duroc 37967	Trotting
4435	W. C. Hindes	Murray	Nemerod 51710 (60354)	Percheron
4437	Hart Bros	Osceola	Le Bon IX 9344 (23426)	Shire
235	C. B. Shinn	Osceola	Ranger 6470	Shire

CLAY COUNTY

424	Clausen & Jones	Peterson	Stockwell IV 6858 (20055)	Shire
508	A. A. Reynolds	Spencer	Jonas 41868 (55201)	Percheron
1002	F. J. Clarke	Fostoria	Silver Moak 40733	Trotter
1460	C. I. Ginger	Langdon	Sam H. 25880	Percheron
1561	Spencer Draft Horse Co.	Spencer	Monaco 1185 (19354)	Belgian
1659	Harmony, Greenville & Douglas Horse Co	Greenville	Romarin 27435 (43618)	Percheron
2028	Alonzo Jones	Peterson	Jumbo G. 8314	Shire
2230	J. W. & Frank McDowell	Greenville	Bolsinger 33323	Trotter
2353	Royal Horse Co	Peterson	Pepin 29490 (45751)	Percheron
2518	Frank McDowell	Spencer	Favorette 40658	Percheron
2519	Frank McDowell	Spencer	Nogentais 23198 (43781)	Percheron
2504	Frank McDowell	Spencer	Kenmor 23023	Percheron
1272	Stouffer, Peterson & Erfmeyer	Fostoria	Urson 2837	French Coach
2980	I. N. Reed	Webb	Audley Boy 7154 (Vol. 25)	Shire
2990	Spencer Draft Horse Co	Spencer	Armagh 2523 (Vol. 13, p. 543)	Belgian
3050	E. U. Roberts	Dickens	Tricolet 50650 (60116)	Percheron
3171	J. H. Everett	Dickens	Improver 4017	Clydesdale
3312	H. H. Mills	Webb	Reno 35761	Percheron
4039	Miles Becket	Spencer	Compton 42965	Percheron
2283	W. H. Brown	Peterson	Knute 18964	Percheron
4262	J. C. Clark	Dickens	Black Prince 50389	Percheron
4369	Slater & Gillespie	Spencer	Biscaien 25707 (43007)	Percheron

CLAYTON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
146	Koontz Bros	Monona	Buzot de Picton (29360)	Belgian
522	J. L. Schneider	Elkader	Triton 42875 (44805)	Percheron
523	J. L. Schneider	Elkader	Clarion De Bel Air 1721 (29522)	Belgian
497	Joseph Cain	Elkader	Iron Duke 29304	Percheron
648	Pettit & Koontz	Monona	Royal Emblem 43208	Trotter
668	Smith & Kahlbaum	Elkader	David De Volle 1347 (24318)	Belgian
958	Kaiser Bros	St. Olaf	Torpilleur 42832 (59926)	Percheron
1386	Wm. Koth & Co.	Farmersburg	Larbin 42881 (54647)	Percheron
1458	A. A. Kishman & A. Henkes	Farmersburg	LeFertois 26296 (18836)	Percheron
1832	G. E. Bachtell	Volga	Star Onward 31514	Trotter
2241	Jas. Crain	Volga	Mercure 25721 (43490)	Percheron
2242	Jas. Crain	Volga	Laddie 45427	Percheron
2397	Geo. Voshell	Volga	Jabot 41034 (53708)	Percheron
2544	Garnavillo Shire Horse Co	Garnavillo	Magnum Bonum IV 7928 (18901)	Shire
2837	Mrs. E. E. Meyers	Elkader	Chabrol 26076 (44799)	Percheron
2926	Hurley & Meyer	Volga	Elvenden First Lord 8583 (23919)	Shire
3262	Henry Jennings, J. C. & Wm. Probert	Volga	Pete 48051	Percheron
3292	Jno. L. Schneider	Elkader	Saxon Billy 9026 (20882)	Shire
3429	Elkport Percheron Horse Co	Elkport	Montague 25357	Percheron
3430	M. S. Welch	Volga	Penrose 6174	Shetland Pony
3472	J. M. Donnelly	Bloom'ton, Wis	Earl King 21817	Trotter
3354	H. C. Bothmer Co	Clayton	Allen Gilbert 42182	Trotter
3549	Humphrey & Leahy	Volga	Paul 1944	French Coach
3569	Gordon White	Volga	Catuamet 31792	Trotter
3598	Percheron Horse Co.	Clayton	Young Cherri 25884	Percheron
1201	C. H. Donahe	Mederville	La Salle 21566	Percheron
4086	J. L. Eno	Launa	Black King 45303	Percheron
4119	L. Rosener	Guttenburg	Clipper of Fairfield 39809	Trotter
1628	Meder & Donaho	Mederville	Bury Colonel 6168 (17220)	Shire

CLINTON COUNTY

527	A. W. Johnson	De Witt	Valespir 11318	French Draft
525	A. W. Johnson	De Witt	Bordelon 38677	Trotter
526	A. W. Johnson	De Witt	Border Wilkes 29022	Trotter
528	A. W. Johnson	De Witt	Margot 27846 (47048)	Percheron
513	J. E. Shannon	De Witt	Sebastian 13886	French Draft
529	A. W. Johnson	De Witt	Enfield Stylish Chief 7935 (21404)	Shire
790	Center Grove Horse Co.	Charlotte	Frank 9926	French Draft
1050	George Corbin	Calamus	Babeuf 44307 (51767)	Percheron
1051	George Corbin	Calamus	Simon De Rosoux 1839 (25366)	Belgian
994	Peter Frett	Brown	Africander (45089)	Percheron
1372	Chris Lund	Elwood	Apollon (19098)	Belgian
1544	Grand Mound Horse Co	Grand Mound	Pedro 28621	Percheron
1556	O. C. Henyon	Clinton	C. H. 33188	Trotter
1985	Wm. Burk	Charlotte	Brulot 41504 (59670)	Percheron
2438	Wm. Tinnefeldt	Lost Nation	Colson (62987)	Percheron
2714	Hicks Bros	Elwood	Lion de Buzet (30272)	Belgian
1041	A. W. Johnson	De Witt	Dewey Boy 39220	Trotter
2822	Brindisi Percheron Horse Co	Bryant	Brindisi 22723 (43414)	Percheron
2821	Eugen Hanssen	Bryant	Stanlaws 4759	Shetland Pony
3082	J. O. Ott	Baldwin	Glendale Major 42438	Percheron
3156	Wm. F. Heinke	Delmar	Vergoin 35101 (45656)	Percheron
3906	A. W. Johnson	De Witt	Paul 51532	Percheron
4042	A. W. Johnson	De Witt	Lew Karr 44300	Trotter
3618	A. W. Johnson	De Witt	Keota Emmett 8271	Shire
4157	A. W. Johnson	De Witt	Decide 47084 (62936)	Percheron
4127	A. W. Johnson	De Witt	Invite 51872 (64997)	Percheron

CRAWFORD COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
200	L. P. Rose	Charter Oak	General 186	Oldenburg Coach
980	Peter J. Eggers	Denison	Archie 34897	Percheron
981	Peter J. Eggers	Denison	Corbett 42790	Percheron
982	Peter J. Eggers	Denison	Mont Dor 8977	French Draft
983	Schlichta Bros	Denison	Vulcan 26841	Percheron
965	B. B. White	Manilla	Young Maakoff 9651	French Draft
1151	W. H. Lamb	Denison	Decorah Jr. 32331	Trotter
1334	R. Knaul	Denison	Absola 43175	Trotter
1004	Ricketts Horse Co	Ricketts	Zephir d'Herlaimont (Vol. 13, p. 478)	Belgian
1488	Fred Coleman	Charter Oak	Victor Dewey 45479	Percheron
1656	Peter Jensen	Charter Oak	Energy 745 (4788)	Belgian
1640	Ida and Sac County Percheron Horse Co	Kiron	Feder 40143 (51266)	Percheron
2391	Chris Koock	Boyer	Bismark de Braibnt 1703 (25394)	Belgian
2494	Henry N. Kuehl	Schleswig	Beau Souvenir (15014)	Belgian
2648	F. J. Smith	Charter Oak	Parnell Beauty 9179	Clydesdale
2672	Kemp & Killeen	West Side	Victor 11478	French Draft
2673	James Killeen	West Side	Arizona 13138	French Draft
2566	H. C. Pithan & Herman Garbe	Charter Oak	Michaux 14893	French Draft
1940	H. H. Chapman & H. J. McGill	Vail	Tarascon 50552 (55555)	Percheron
2032	Adolf Meyer, Sr.	Charter Oak	Salvator 50219 (80080)	Percheron
3035	W. V. Whaley	Dow City	Iowa Wonder 44 (1672)	Suffolk
3140	C. A. Saunders	Manilla	Flanche 46481 (53966)	Percheron
3166	J. B. Gardner	Manilla	Mastique II De Vlieringen 1976 (28098)	Belgian
3253	Hugh Daugherty	Manilla	Titus 1735 (8969)	German Coach
3264	P. A. Klinkefus	Manilla	Sultan 285	Suffolk
3512	T. M. Sheridan	Vail	Gravier 28479 (45129)	Percheron
3513	T. J. Kenney	Vail	Iowa Ranger 30713	Trotter
3522	James Mitchell	West Side	Matinal 25708 (44350)	Percheron
3544	L. P. Rose	Charter Oak	Tammo (12103)	German Coach
3612	Schmadke Bros	Denison	Colenso 1402 (25004)	Belgian
4060	L. P. Rose	Charter Oak	Piston 40908 (46721)	Percheron
3397	Tom Ransom	Denison	Harry Judge 34560	Trotter
4227	Albert Peterson	Dow City	Godolphin 48871	Percheron
303	F. W. Miller	Manilla	Bon Atas 7754	Shire
1700	Ellsie Brokelsly	Vail	Hanksoid 33113	Trotter

DALLAS COUNTY

131	J. B. Saum	Woodward	Sans Tache 22012 (43146)	Percheron
226	Martin Russell	Dallas Center	Wenona Regent 22564	Percheron
253	Belgian Horse Co	Redfield	Saint Martin (29462)	Belgian
317	Leon Mills	Perry	Banner 13189	French Draft
318	J. R. Mills	Perry	Narcisse 21992 (42440)	Percheron
324	W. B. Fritz	Dexter	Sergeant Major 8292 (21849)	Shire
336	T. P. Cushing	Booneville	Scarcliff Sweep (8173)	Shire
287	Thos. Eckert	Woodward	Jules 647	Belgian
652	Stoots & Kline	Redfield	Carral (54564)	Percheron
50	J. H. Andrew	Dexter	Earl Royal 37070	Trotter
637	R. S. Barr	Adel	Dan McCloud 43139	Trotter
636	R. S. Barr	Adel	Colonel McCoy 33112	Trotter
768	Robt. Burchfield	Linden	Rex Legrand 1993	Saddle Horse
658	W. S. Robinson	Dexter	Jim Kelly 43068	Trotter
626	De Soto Shire Horse Co	De Soto	Halstead Duke 7352 (20537)	Shire
409	J. F. Turner	Linden	Facteur 26913 (45803)	Percheron
767	Wm. A. Warford	Linden	Grant 9138	French Draft
1056	Dawson Draft Horse Co	Dawson	Fairfield Stormer 5673	Shire
1136	T. A. Thornburg	Linden	Maynard 10022	French Draft
1199	C. B. Pierce	Woodward	Major De Beaumont (20760)	Belgian
1401	D. C. Kelly	Dallas Center	Laurens 41030	Percheron
1480	M. B. Boll	Waukee	Flashlight Prince 7701	Shire

DALLAS COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1489	Perry Belgian Horse Co.	Perry	Vulcan 2235 (25410)	Belgian
1675	John Bair	Perry	Dewey 10974	French Draft
1676	John Bair	Perry	Bataclan 30587 (48721)	Percheron
1786	Belgian Horse Co.	Dexter	Coco (10448)	Belgian
1826	A. W. Dickerson	Woodward	Hero-Ben 50251	Percheron
1836	J. R. Mills	Perry	Salem 15092	French Draft
1835	J. R. Mills	Perry	Minot 15090	French Draft
1834	J. R. Mills	Perry	Conrad 15087	French Draft
1833	Leon Mills	Perry	Constant 15086	French Draft
1840	Emery Skinner	Adel	Rapin 24496 (42413)	Percheron
2218	W. E. DuToit	Woodward	Abel 677 (581)	German Coach
2674	Elwood Beaseley	Adel	Linwood 22566	Percheron
2461	H. C. Addy	Van Meter	Yacca 35903	Trotter
2569	I. C. Stine	Dallas Center	Iowa Chief 2569	Shire
2734	Theodore Quick	Dexter	Tuduc 14991 (57768P)	French Draft
2827	J. A. Minteer	Van Meter	Prince I. X. L. 43530	Trotter
3388	J. H. Andrew	Dexter	Victor 24128	Percheron
3402	C. H. Green	Woodward	Ted 45859	Percheron
3433	C. W. Council	Perry	Pimeto 18761	Trotter
3432	C. W. Council	Perry	Drifton 12165	Trotter
3434	R. C. Taylor	Perry	Taylor W. 42190	Trotter
3489	John J. Wolber	Woodward	Major Murray 4597	Shire
3541	Roy R. Estls	Minburn	Nick 46503	Percheron
3562	C. H. Gardiner	Bouton	Nobelmann (Vol. 7)	**Oldenburg Coach**
3616	R. K. Purviance	Minburn	French 15730	French Draft
3891	Henry Schnoor	Perry	Profit 7296	Shire
4024	Ortonville Horse Co.	Waukee	Ronflant 51434 (61553)	Percheron
2319	C. M. Badger	Adel	Castor 41848 (62526)	Percheron
4225	A. B. McCleeary	Booneville	Demblon 1327 (13188)	Belgian
4269	J. H. Royle	Dallas Center	Molitor 44035	Percheron
4274	Belgian Horse Co	Minburn	Gaspard de Liroux (26910)	Belgian
4307	R. S. Witter	Dawson	Avenir de Thines 3008 (34174)	Belgian
4355	Crawford Bros.	Bouton	Rubis de Berlin 1355 (23076)	Belgian
4356	W. N. Crawford	Minburn	Dance 12934 (53888)P	French Draft

DAVIS COUNTY

252	W. E. Irvin	R. No. 1, Floris	Enterprise 4047	Clydesdale
294	J. D. Baughman	Pulaski	Lightfoot 13749	French Draft
333	Jno. Augspurger	Pulaski	Titus 4669	Morgan
557	E. S. Stockman	Bloomfield	Togo 13764	French Draft
556	E. S. Stockman	Bloomfield	Tedy-R 34522	Percheron
592	B. F. Ritz	Pulaski	Fletcher 29112	Percheron
700	Wm. G. Brown	Bloomfield	Merak 9672	French Draft
972	L. C. Warthen	Bloomfield	Troubadour 26061 (46815)	Percheron
904	W. C. Baughman	Pulaski	Colonel 13015	French Draft
905	W. C. Baughman	Pulaski	Leroy II 14182	French Draft
906	W. C. Baughman	Pulaski	Initial 20030	Percheron
907	W. C. Baughman	Pulaski	Grand Papillon 29761	Percheron
1085	Albert Munn	Belknap	Major R. 10394	French Draft
1079	Peter B. Horn	Bloomfield	Brilliant 27209	Percheron
1054	W. W. Powers	Bloomfield	Jericarde 21857	Percheron
884	J. W. McConnell	Drakesville	Lorin 23700	Percheron
1165	N. E. Merry	Bloomfield	Jerome 9819	French Draft
1475	James McGowan	Bloomfield	Baron Laddie 39865	Trotter
1476	James McGowan	Bloomfield	Motell 40427	Trotter
1477	James McGowan	Bloomfield	Reed Bismont 34102	Trotter
1721	P. G. Martin	Bloomfield	Ecumeur 28457 (45983)	Percheron
2322	A. L. Watson	Pulaski	Delcarde (7510)	Percheron
2386	I. C. Evans	Troy	Andrew Carnagie 44363	Percheron
2388	J. & M. Horan	Floris	Samson 10395	French Draft
2679	C. F. Davis	Bloomfield	Beaucamp 19938	Percheron
2680	C. F. Davis	Bloomfield	Cap Sheaf II 43525	Percheron
2806	J. M. Peden	Floris	Noceur 11326 26911P (45829)	French Draft Percheron
2807	N. M. Peden	Floris	Gaylord 11867	French Draft
2817	Chas. Daugherty	Bloomfield	Theadore 34783	Percheron

DAVIS COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2828	I. C. Evans	Troy	Picador 40385	Percheron
2943	Wm. J. Plank	Bloomfield	Daniel 13002	French Draft
3043	L. W. Cruikshank	Bloomfield	Big Fox 12798	Trotter
3118	A. A. Morgan	Bloomfield	Indi 30823	Trotter
3117	A. M. Swift	Bloomfield	Bonnie Dillon 30589	Trotter
3165	Cronk & Wise	Bloomfield	Uncle Bob 9958	French Draft
839	C. B. Swartzendruver	Pulaski	Demon II 19407	Percheron
3297	Geo. Baird	Bloomfield	Renebel 36731	Trotter
3363	W. S. McFarlin	Bunch	Caserio 43348 (52417)	Percheron
3453	L. E. Cambron	Bloomfield	S. E. H. 26654	Thoroughbred
3454	U. W. Boatman	Lunsford	Topsman 12561	French Draft
3539	P. C. Martin	Bloomfield	Mosco 41954	Percheron
3654	I. C. Evans	Troy	Paul 50480	Percheron
3665	L. C. & Walter Warthen	Bloomfield	Turbulant 47078 (63496)	Percheron
4079	J. F. Albright	Ashgrove	Demon's Dictator 53150	Percheron
4353	Albert Munn	Belknap	Seboski 51348 (62804)	Percheron
4352	Albert Munn	Belknap	Brilliant III 14183	French Draft

DECATUR COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
589	J. W. Mather	Lamoni	Glenbrino 30412	Trotter
565	J. S. Beavers	Woodland	Willingham Lad 5928 (18453)	Shire
649	A. Noble	Decatur	Joe Banker 6976	Shire
663	Pleasanton Horse Co.	Pleasanton	Manuel (51817)	Percheron
984	E. P. Hamilton	Garden Grove	Ferndale 10529	French Draft
985	E. P. Hamilton	Garden Grove	Creston Jerry 6205	Shire
986	E. P. Hamilton	Garden Grove	Harbison 2900	Trotter
1264	W. M. Frost	Leon	Souldern Vulcan 7501 (20038)	Shire
1358	N. L. Chase	Garden Grove	Prince of Norwood 1358	French Draft
1504	C. E. Thompson	Leon	Major McKinley Jr. 955	Belgian
1135	Wm. Goodman	Leon	Admiral Sampson 24957	Percheron
2137	Wm. Goodman	Leon	Augerau 44037	Percheron
2246	E. Gregory	Weldon	Glendive 50155	Percheron
2323	James Howell	Leon	Vampar 24560 (43505)	Percheron
2321	Van Wert Percheron Horse Co.	Van Wert	Vaillant 50642 (55506)	Percheron
2333	Andover Draft Horse Co.	Lamoni	Pekin 1701 (17450)	Belgian
488	H. L. Coontz	Woodland	Bury Ironclad 6692 (20332)	Shire
2447	Geo. P. Britt	Leon	Osceola Champion 11597	French Draft
1661	Leon Horse Co.	Leon	Luron D'Orbais 2257 (Vol. 12)	Belgian
2829	A. A. Rew	Lamoni	Prince Henry 8207	Shire
2908	O. W. Hood	Le Roy	Nougat 22658 (43653)	Percheron
2937	Chas. Boor & E. H. Abraith	Le Roy	Mirko 640 (3934)	Belgian
3046	Theo. Brenizer	Lamoni	Faro d'Estinnes 2220 (29510)	Belgian
3086	Eden Prairie Shire Horse Co.	Leon	Highland Laddie 7950 (22976)	Shire
2158	Ernest Prang	Decatur	Port Arthur 41412 (61936)	Percheron
3373	Turbott & Morrison	Weldon	Hernande 12778	French Draft
3401	Wilber Prall	Lamoni	Wilesman 21078	Trotter
3551	B. E. Rushing	Le Roy	Jeff G. 32150	Trotter
3563	W. H. Hazlet	Leon	Eastwood Field Marshal 8991 (24217)	Shire
3576	John P. Kline	Weldon	Beaudoin 10341 (13923)	Percheron
3590	R. J. Critchfield	Weldon	Nickson Sprague 14368	Trotter
3591	R. J. Critchfield	Weldon	Prince Imperial 20640	Percheron
3606	Chas. E. Hall	Weldon	Marquant 32430 (48896)	Percheron
1724	N. L. Chase	Garden Grove	Marquis Dewey 11047	Clydesdale
2249	Otis Deisher	Woodland	Eastern Craftsman 6240 (19575)	Shire
3996	E. P. Hamilton	Garden Grove	Jumbo 51260	Percheron
3997	E. P. Hamilton	Garden Grove	Boliver 51261	Percheron

DECATUR COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3998	E. P. Hamilton	Garden Grove	Dale 51259	Percheron
4207	S. P. Rogers	Pleasanton	Tellico II 15022	French Draft
4409	Truman's Pioneer Stud - Keeper Wm. Camp	Leon	8190 Hockwold Bordeaux	Hackney

DELAWARE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
122	E. W. Cook	Manchester	Conway Hercule 878	Belgian
671	Enterprise Horse Co.	Ryan	Mouton (53341)	Percheron
746	Henry Goodhile	Manchester	Commodore Dewey 8883	Clydesdale
715	Henry Percival	Manchester	Ideal D. 14562	Trotter
921	W. A. Lang & Co.	Greeley	Black Diamond 42423	Percheron
931	W. A. Lang & Co.	Greeley	Zurich De Ronquieres 2233 (27594)	Belgian
936	W. A. Lang & Co.	Greeley	Marquis De Velroux (Vol. 13, p. 513)	Belgian
938	W. A. Lang & Co.	Greeley	Cacas Wild (32040)	Belgian
939	W. A. Lang & Co.	Greeley	Mouffle (37362)	Belgian
942	W. A. Lang & Co.	Greeley	Bourguinon (36950)	Belgian
943	W. A. Lang & Co.	Greeley	Mikado (36916)	Belgian
945	W. A. Lang & Co.	Greeley	Werther (Vol. 13, p. 287)	Belgian
947	W. A. Lang & Co.	Greeley	Vaillant De Letrud (37360)	Belgian
946	W. A. Lang & Co.	Greeley	Bijou Du Moulin (36608)	Belgian
949	W. A. Lang & Co.	Greeley	Roustan (33822)	Belgian
1087	W. B. Van Alstyne	Manchester	Osceola Prince 5988	Shire
1117	H. Pugh	Ryan	Bahno 38751	Trotter
1116	H. Pugh	Ryan	Favorite 30151	Percheron
1413	Ryan Horse Co.	Ryan	Gelif 27109 (45385)	Percheron
1609	F. W. Smith	Manchester	Capricorne 24719 (44606)	Percheron
1767	Geo. Coldsborough	Dundee	Lexington Macey 26408	Trotter
1821	A. B. Holbert	Greeley	Clamart (57369)	Percheron
1863	A. B. Holbert	Greeley	Tonsin (28530)	Belgian
1865	A. B. Holbert	Greeley	Stuntney Arsaces (23729)	Shire
1866	A. B. Holbert	Greeley	Stuntney Sagamore (23828)	Shire
1868	A. B. Holbert	Greeley	Rip Van Winkle (23640)	Shire
1869	A. B. Holbert	Greeley	Stuntney Button (23743)	Shire
1870	A. B. Holbert	Greeley	Mark Time (23487)	Shire
1873	A. B. Holbert	Greeley	Redlynch Mentor (22716)	Shire
1874	A. B. Holbert	Greeley	Cherry Farmer (23155)	Shire
1875	A. B. Holbert	Greeley	Tansor Prince (22848)	Shire
1876	A. B. Holbert	Greeley	Stone Ashton Nabob (23730)	Shire
1877	A. B. Holbert	Greeley	Troag Conqueror (23931)	Shire
1879	A. B. Holbert	Greeley	Boxeur D'Oplinter 2384 (33012)	Belgian
1880	A. B. Holbert	Greeley	Bebe De Hex 2383 (33352)	Belgian
1881	A. B. Holbert	Greeley	Cresus D'Ap 2385 (36920)	Belgian
1882	A. B. Holbert	Greeley	Pierrot De Kemexhe 2390 (37428)	Belgian
1883	A. B. Holbert	Greeley	Zut 2393 (30746)	Belgian
1884	A. B. Holbert	Greeley	Brigadier 2380 (25444)	Belgian

DELAWARE COUNTY—CONTINTED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1885	A. B. Holbert	Greeley	Bourguignon 2382 (Vol. 13, p. 698)	Belgian
1887	A. B. Holbert	Greeley	Capitaine De Questenne 2474 (28324)	Belgian
1888	A. B. Holbert	Greeley	Joubert D'Enixhe 2476 (Vol. 13, p. 469)	Belgian
1889	A. B. Holbert	Greeley	Midas 2480 (Vol. 13, p. 935)	Belgian
1890	A. B. Holbert	Greeley	Ortoni 2481 (Vol. 13, p. 620)	Belgian
1891	A. B. Holbert	Greeley	Bruno De Hartenge 2472 (Vol. 13, p. 528)	Belgian
1892	A. B. Holbert	Greeley	Syveton 2482 (Vol. 13, p. 619)	Belgian
1893	A. B. Holbert	Greeley	Marin II 2479 (36496)	Belgian
1894	A. B. Holbert	Greeley	Bayard Bierse 2473 (34696)	Belgian
1895	A. B. Holbert	Greeley	Le Dernier 2478 (35462)	Belgian
1896	A. B. Holbert	Greeley	Teutone (2154)	Belgian
1897	A. B. Holbert	Greeley	Triumpf (2153)	Holstein Coach
1899	A. B. Holbert	Greeley	Trompeter (2152)	Holstein Coach
1900	A. B. Holbert	Greeley	Rittmeister (2085)	Holstein Coach
1901	A. B. Holbert	Greeley	Goldfellow 3507	German Coach
1902	A. B. Holbert	Greeley	Waldemar 2507	German Coach
1903	A. B. Holbert	Greeley	Conseil 50515 (63464)	Percheron
1904	A. B. Holbert	Greeley	Milan 50543 (59935)	Percheron
1905	A. B. Holbert	Greeley	Chamant 50512 (59938)	Percheron
547	Wm. J. Claus	Delaware	Joe Anderson 40174	Percheron
1906	A. B. Holbert	Greeley	Arlequin 50503 (62524)	Percheron
1907	A. B. Holbert	Greeley	Tartarin 50553 (55554)	Percheron
1908	A. B. Holbert	Greeley	Idem 50530 (63371)	Percheron
1909	A. B. Holbert	Greeley	Lutteur 50539 (57156)	Percheron
1910	A. B. Holbert	Greeley	Avenir D' Erbi 2381 (29458)	Belgian
1911	A. B. Holbert	Greeley	Grain D'Or D'Awans 2387 (32418)	Belgian
1912	A. B. Holbert	Greeley	Hercule De Vald (33290)	Belgian
1913	A. B. Holbert	Greeley	Puissant (33288)	Belgian
1915	A. B. Holbert	Greeley	Biocarde 50625 (63288)	Percheron
1916	A. B. Holbert	Greeley	Coquet 50626 (64336)	Percheron
1917	A. B. Holbert	Greeley	Krasis 50630 (63367)	Percheron
1918	A. B. Holbert	Greeley	Louvigny 50531 (63539)	Percheron
1919	A. B. Holbert	Greeley	Martinet 50532 (58905)	Percheron
1920	A. B. Holbert	Greeley	Herien 50629 (63373)	Percheron
1921	A. B. Holbert	Greeley	Glorieux 50628 (56527)	Percheron
1922	A. B. Holbert	Greeley	Pollux 50633 (58788)	Percheron
1923	A. B. Holbert	Greeley	Rosier 50635 (55147)	Percheron
1924	A. B. Holbert	Greeley	Eldorado 50627 (60095)	Percheron
1925	A. B. Holbert	Greeley	Retour 50634 (61618)	Percheron
1927	A. B. Holbert	Greeley	Turbot 50555 (56725)	Percheron
1928	A. B. Holbert	Greeley	Ictere 50533 (63372)	Percheron
1929	A. B. Holbert	Greeley	Liao 50537 (62479)	Percheron
1930	A. B. Holbert	Greeley	Lusignan 50538 (62499)	Percheron
1931	A. B. Holbert	Greeley	Marceau 50541 (62874)	Percheron
1932	A. B. Holbert	Greeley	Mathurin 50542 (59438)	Percheron
1933	A. B. Holbert	Greeley	Madrid 50540 (53077)	Percheron
1934	A. B. Holbert	Greeley	Pomard 50547 (55615)	Percheron
1935	A. B. Holbert	Greeley	Philosophe 50546 (61833)	Percheron
1937	A. B. Holbert	Greeley	Roussillon 50550 (62155)	Percheron
1938	A. B. Holbert	Greeley	Ramoneur 50549 (62475)	Percheron
1939	A. B. Holbert	Greeley	Telephone 50554 (60100)	Percheron
1941	A. B. Holbert	Greeley	Talma 50551 (62500)	Percheron
1942	A. B. Holbert	Greeley	Vainqueur 50557 (54334)	Percheron
1943	A. B. Holbert	Greeley	Vallon 50559 (63023)	Percheron
1944	A. B. Holbert	Greeley	Vibrant 50560 (59941)	Percheron
1946	A. B. Holbert	Greeley	Turco 50556 (62731)	Percheron
1948	A. B. Holbert	Greeley	Armor 50505 (62317)	Percheron
1949	A. B. Holbert	Greeley	Amiral 50501 (61712)	Percheron
1950	A. B. Holbert	Greeley	Arlequin 50504 (63767)	Percheron
1951	A. B. Holbert	Greeley	Bardoux 50536 (62831)	Percheron
1952	A. B. Holbert	Greeley	Bataclan 50506 (62478)	Percheron
1953	A. B. Holbert	Greeley	Brillant 50508 (53950)	Percheron
1954	A. B. Holbert	Greeley	Cointeyr 50511 (52724)	Percheron
1955	A. B. Holbert	Greeley	Biscuit 50507 (63791)	Percheron
1956	A. B. Holbert	Greeley	Castor 50510 (59937)	Percheron

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1957	A. B. Holbert----	Greeley ----------	Cabaster 50509 (63079)--	Percheron
1958	A. B. Holbert----	Greeley ----------	Considerant 50516-------- (60084)	Percheron
1959	A. B. Holbert----	Greeley ----------	Costo 50517 (63970)-------	Percheron
1960	A. B. Holbert----	Greeley ----------	Chatlet 50513 (57372)----	Percheron
1961	A. B. Holbert----	Greeley ----------	Docteur 50520 (64995)----	Percheron
1962	A. B. Holbert----	Greeley ----------	Derval 50519 (62567)-----	Percheron
1963	A. B. Holbert----	Greeley ----------	Eclat 50521 (63212)------	Percheron
1964	A. B. Holbert----	Greeley ----------	Ecorpain 50522 (62488)--	Percheron
1965	A. B. Holbert----	Greeley ----------	Edison 50523 (63119)----	Percheron
1966	A. B. Holbert----	Greeley ----------	Estival 50524 (63653)----	Percheron
1967	A. B. Holbert----	Greeley ----------	Etudiant 50525 (63073)---	Percheron
1968	A. B. Holbert----	Greeley ----------	Facteur 50526 (64154)---	Percheron
1969	A. B. Holbert----	Greeley ----------	Fierot 50527 (62666)-----	Percheron
1970	A. B. Holbert----	Greeley ----------	Flerridalenzen 50528 -- (63948)	Percheron
1971	A. B. Holbert----	Greeley ----------	Harley 50532 (61724)-----	Percheron
1972	A. B. Holbert----	Greeley ----------	Farino 50665 (62885)-----	Percheron
1973	A. B. Holbert----	Greeley ----------	Racine 50666 (60613)------	Percheron
1995	A. B. Holbert----	Greeley ----------	Passe Partout 2389---- (35570)	Belgian
1996	A. B. Holbert----	Greeley ----------	Garcon de Bothey 2386 (Vol. 13, p. 600)	Belgian
1998	A. B. Holbert----	Greeley ----------	Valerien 50558 (62497)--	Percheron
1999	A. B. Holbert----	Greeley ----------	Pedro 50545 (55549)------	Percheron
2000	A. B. Holbert----	Greeley ----------	Guignol 50531 (57894)----	Percheron
2095	Peter Milroy ----	Hopkinton ------	Hero 23943---------------	Percheron
2096	Peter Milroy ----	Hopkinton ------	Sampson 26529 ----------	Percheron
2097	Peter Milroy ----	Hopkinton ------	Bravo 22166 -------------	Percheron
2098	Peter Milroy ----	Hopkinton ------	La-Forte 34839 ----------	Percheron
2099	Peter Milroy ----	Hopkinton ------	Castelar I 29842---------	Percheron
2278	J. D. Moulton----	Hopkinton ------	Friedland (45001) -------	Percheron
2419	A. B. Holbert----	Greeley ----------	Stuntney Bulbo 888---- (9557)	Hackney
2420	A. B. Holbert----	Greeley ---- -----	Blanch Bombey 890---- (9554)	Hackney
2421	A. B. Holbert----	Greeley ---------	Ely Orel 884 (9209)------	Hackney
2422	A. B. Holbert----	Greeley ----------	Misty Morn 885 (9344)--	Hackney
2423	A. B. Holbert----	Greeley ---- ---	B. B. Crispy 886 (9113)	Hackney
2424	A. B. Holbert----	Greeley ----------	Duke of the Hills 882-- (9199)	Hackney
2425	A. B. Holbert----	Greeley ----------	Priory Prince 887------- (9556)	Hackney
2426	A. B. Holbert----	Greeley ----------	Stuntney Extradition 883 (9031)	Hackney
2663	Barryville Horse Co. --------------	Ryan -------------	Mercure 21743 (44027)---	Percheron
1575	Henry Goodhile--	Manchester -----	J. S. Ricker 37168------	Trotter
2565	L. C. Reardon---	Hopkinton ------	Marcara Charming 10837	Clydesdale
2578	John Rosa --------	Masonville ---- -	Perche 26562 16185 ------	Percheron and French Draft
2733	F. L. Carpenter-	Almoral Station-	Jaun de Teny (32016)--	Belgian
2801	A. B. Holbert----	Greeley ----------	Regulus 43894------------	Percheron
2927	A. B. Holbert----	Greeley ----------	Joubert II -------------- (Vol. 12, p. 847)	Belgian
2488	L. B. Stanger ----	Hopkinton ------	Primo 25604 (44596)------	Percheron
3016	A. B. Holbert----	Greeley ----------	Baron Willerby 889---- (8730)	Hackney
1878	Edward Cook-----	Manchester -----	Sultan de Kemexhe---- 2391 (37430)	Belgian
3787	A. B. Holbert----	Greeley ------ ---	Orangiste 51470 (68735)--	Percheron
3788	A. B. Holbert----	Greeley ------ - -	Rambeau 51472 (68895)-	Percheron
3789	A. B. Holbert----	Greeley ----------	Magenta 51474 (69129)---	Percheron
3790	A. B. Holbert----	Greeley ----------	Madere 51475 (67094)----	Percheron
3791	A. B. Holbert----	Greeley ----------	Petard 51473 (68511) ----	Percheron
3792	A. B. Holbert----	Greeley ---- ---	Flambard 51495 (55486) -	Percheron
3793	A. B. Holbert----	Greeley ----------	Robespierre 51481 (65817)	Percheron
3794	A. B. Holbert----	Greeley ----------	Polichinette 51482 ------ (67786)	Percheron
3795	A. B. Holbert----	Greeley -------- -	Framboisy 51483 ------- (65709)	Percheron
3796	A. B. Holbert----	Greeley ----------	Lapin 51486 (65185)------	Percheron
3797	A. B. Holbert----	Greeley ----------	Boulanger 51496 -------- (58092)	Percheron
3799	A. B. Holbert----	Greeley ----------	Roitlet 51499 (61904)-----	Percheron
3800	A. B. Holbert----	Greeley ----------	Cuba 51476 (68674)--------	Percheron

DELAWARE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3801	A. B. Holbert	Greeley	Matinal 51477 (65767)	Percheron
3802	A. B. Holbert	Greeley	Brilliant 51487 (68902)	Percheron
3803	A. B. Holbert	Greeley	Zoubec 51510 (66462)	Percheron
3804	A. B. Holbert	Greeley	Bonsfari 51505 (66463)	Percheron
3805	A. B. Holbert	Greeley	Lacepede 51586 (68299)	Percheron
3806	A. B. Holbert	Greeley	Montjoie 51507 (67405)	Percheron
3807	A. B. Holbert	Greeley	Rivarol 51509 (66465)	Percheron
3808	A. B. Holbert	Greeley	Josias 51504 (66166)	Percheron
3809	A. B. Holbert	Greeley	Aspect 51484 (66466)	Percheron
3810	A. B. Holbert	Greeley	Boileau 51508 (66469)	Percheron
3811	A. B. Holbert	Greeley	Polyte 51480 (66877)	Percheron
3812	A. B. Holbert	Greeley	Bruyant 51502 (65044)	Percheron
3813	A. B. Holbert	Greeley	Petard 51478 (66833)	Percheron
3814	A. B. Holbert	Greeley	Volombert 51530 (65716)	Percheron
3815	A. B. Holbert	Greeley	Rivoli 51471 (66676)	Percheron
3816	A. B. Holbert	Greeley	Bolero 51525 (66356)	Percheron
3817	A. B. Holbert	Greeley	Robinot 51529 (56255)	Percheron
3818	A. B. Holbert	Greeley	Laghouat 51528 (68305)	Percheron
3819	A. B. Holbert	Greeley	Crack 51527 (68372)	Percheron
3820	A. B. Holbert	Greeley	Colfichet 51526 (61600)	Percheron
3822	A. B. Holbert	Greeley	Stuntney Benedict 1000 (8660)	Hackney
3823	A. B. Holbert	Greeley	Ely Dane 997 (9206)	Hackney
3824	A. B. Holbert	Greeley	Witcham Swell 998 (9986)	Hackney
3825	A. B. Holbert	Greeley	Putney Prospect 999 (9380)	Hackney
3846	A. B. Holbert	Greeley	Major de Gerbehaye 2997 (38598)	Belgian
3845	A. B. Holbert	Greeley	Premus de Vlad 2999 (41918)	Belgian
3844	A. B. Holbert	Greeley	Orpheon de Marais 2998	Belgian
3843	A. B. Holbert	Greeley	Sultan Du Marais 3003	Belgian
3842	A. B. Holbert	Greeley	Hercule de la Dendre 2995	Belgian
3841	A. B. Holbert	Greeley	Carnot de Vlad 2993	Belgian
3840	A. B. Holbert	Greeley	Sultan de Vlad 3002 (41920)	Belgian
3839	A. B. Holbert	Greeley	Vainquerur de Ninove 3004 (41924)	Belgian
3838	A. B. Holbert	Greeley	Samson D' Anseghem 3000	Belgian
3835	A. B. Holbert	Greeley	Rentier 4537	German Coach
3834	A. B. Holbert	Greeley	Partner 4535	German Coach
3833	A. B. Holbert	Greeley	Victor 4533	German Coach
3832	A. B. Holbert	Greeley	Reve D' Or 4531	German Coach
3831	A. B. Holbert	Greeley	Recke 4549	German Coach
3830	A. B. Holbert	Greeley	Trojan 4547	German Coach
3829	A. B. Holbert	Greeley	Uhland 4545	German Coach
3828	A. B. Holbert	Greeley	Takt 4543	German Coach
3827	A. B. Holbert	Greeley	Ubier 4541	German Coach
3826	A. B. Holbert	Greeley	Pascha 4539	German Coach
3858	A. B. Holbert	Greeley	Seemann 4591	German Coach
3895	W. A. Lang & Co.	Greeley	Chambol 3113 (31960)	Belgian
3866	W. A. Lang & Co.	Greeley	Millardaire 3116 (41954)	Belgian
3867	W. A. Lang & Co.	Greeley	Milton 3117 (40160)	Belgian
3868	W. A. Lang & Co.	Greeley	Joker 3021 (51964)	Belgian
3869	W. A. Lang & Co.	Greeley	Blanc Bec D'Oudoumont 3111	Belgian
3870	W. A. Lang & Co.	Greeley	Bandouin 3109 (41524)	Belgian
3871	W. A. Lang & Co.	Greeley	Ideal 3019	Belgian
3872	W. A. Lang & Co.	Greeley	Zinger 3119	Belgian
3873	W. A. Lang & Co.	Greeley	Forton de Lierde 3115	Belgian
3874	W. A. Lang & Co.	Greeley	Pomme d' Or 3118 (51966)	Belgian
3875	W. A. Lang & Co.	Greeley	Lionel 2577 (41956)	Belgian
3327	D. W. Barr	Manchester	Dr. Hardie 43521	Trotter

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3357	W. A. Lang & Co.	Greeley	Royal King 9770 (10276)	Clydesdale
3457	W. A. Lang & Co.	Greeley	Perfection 48528	Percheron
1049	W. A. Lang & Co.	Greeley	Sceptique 44308 (60627)	Percheron
3571	G. H. Utley	Manchester	Hazlett 29267	Percheron
3573	H. C. Smith	Manchester	Ardell Simmons 38461	Percheron
3655	Thorpe Bros.	Manchester	Grimaux 29511 (45374)	Percheron
3710	W. A. Lang & Co.	Greeley	Aiglon 2898 (41870)	Belgian
3712	W. A. Lang & Co.	Greeley	Fripon de Gammerages 2903 (41268)	Percheron
3713	W. A. Lang & Co.	Greeley	Mouton de Lexhy 2907 (38236)	Belgian
3714	W. A. Lang & Co.	Greeley	Loufogue 2906	Belgian
3715	W. A. Lang & Co.	Greeley	Lillois 2904 (33210)	Belgian
3716	W. A. Lang & Co.	Greeley	Mouton de Bierset 2908	Belgian
3717	W. A. Lang & Co.	Greeley	Philippe 2909 (41894)	Belgian
3718	W. A. Lang & Co.	Greeley	Thomas 2910 (41872)	Belgian
3719	W. A. Lang & Co.	Greeley	Leon de Trop 2905 (41456)	Belgian
3720	W. A. Lang & Co.	Greeley	Garibaldi de Rouvroy 2903	Belgian
3721	W. A. Lang & Co.	Greeley	Bouquet de Dhuy 2900 (39162)	Belgian
3709	W. A. Lang & Co.	Greeley	Aspic 51232 (61814)	Percheron
3708	W. A. Lang & Co.	Greeley	Gourmand 51239 (67885)	Percheron
3707	W. A. Lang & Co.	Greeley	Dubreuil 51236 (61890)	Percheron
3706	W. A. Lang & Co.	Greeley	Cerbere 51234 (62771)	Percheron
3705	W. A. Lang & Co.	Greeley	Etonne 51237 (68563)	Percheron
3704	W. A. Lang & Co.	Greeley	Agrach 51231 (65131)	Percheron
3703	W. A. Lang & Co.	Greeley	Dartagnan 51235 (65756)	Percheron
3701	W. A. Lang & Co.	Greeley	Phine 51240 (63336)	Percheron
3737	A. B. Holbert	Greeley	April 51235 (59683)	Percheron
3736	A. B. Holbert	Greeley	Banqueteur 51236 (62976)	Percheron
3735	A. B. Holbert	Greeley	Caprice 51238 (59096)	Percheron
3734	A. B. Holbert	Greeley	Dore 51239 (64514)	Percheron
3733	A. B. Holbert	Greeley	Prince 51243 (63150)	Percheron
3732	A. B. Holbert	Greeley	Bon Espoie 51237 (63332)	Percheron
3731	A. B. Holbert	Greeley	Monaco 51242 (60109)	Percheron
3730	A. B. Holbert	Greeley	Renault 51244 (63945)	Percheron
3729	A. B. Holbert	Greeley	Imaret 51240 (63355)	Percheron
3727	A. B. Holbert	Greeley	Trotteur 2701 (35938)	Belgian
3726	A. B. Holbert	Greeley	Ivoire de Wicken 2696 (38106)	Belgian
3725	A. B. Holbert	Greeley	Clovis 2693 (41824)	Belgian
3724	A. B. Holbert	Greeley	Bijou de Ter 2692 (33630)	Belgian
3723	A. B. Holbert	Greeley	Mikado 2698 (41748)	Belgian
3722	A. B. Holbert	Greeley	Garibaldi 2695 (41820)	Belgian
3743	A. B. Holbert	Greeley	Ravin 51477 (68421)	Percheron
3744	A. B. Holbert	Greeley	Stigmate 51446 (66205)	Percheron
3753	A. B. Holbert	Greeley	Brillant de Malaxhe 3033 (41934)	Belgian
3754	A. B. Holbert	Greeley	Insolent 3034 (37386)	Belgian
3755	A. B. Holbert	Greeley	Narius de Bove 3035 (39240)	Belgian
3756	A. B. Holbert	Greeley	Avenir de Bove 3032	Belgian
3757	A. B. Holbert	Greeley	Yunis 3038	Belgian
3758	A. B. Holbert	Greeley	Renard 3036 (41940)	Belgian

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3759	A. B. Holbert	Greeley	Tambour 3037 (41942)	Belgian
3767	A. B. Holbert	Greeley	Soldat 4523	German Coach
3769	A. B. Holbert	Greeley	Fulminate 51466 (66385)	Percheron
3770	A. B. Holbert	Greeley	Marcara 51485 (66464)	Percheron
3771	A. B. Holbert	Greeley	Albain 51479 (66227)	Percheron
3772	A. B. Holbert	Greeley	Lithium 51498 (63937)	Percheron
3773	A. B. Holbert	Greeley	Panhard 51488 (66456)	Percheron
3774	A. B. Holbert	Greeley	Leon 51489 (65542)	Percheron
3775	A. B. Holbert	Greeley	Neptune 51493 (60632)	Percheron
3776	A. B. Holbert	Greeley	Koko 51492 (67810)	Percheron
3777	A. B. Holbert	Greeley	Lubin 51494 (68568)	Percheron
3778	A. B. Holbert	Greeley	Patraque 51491 (65437)	Percheron
3779	A. B. Holbert	Greeley	Kroumir 51490 (65686)	Percheron
3780	A. B. Holbert	Greeley	Marius 51511 (68702)	Percheron
3781	A. B. Holbert	Greeley	Bataclan 51500 (62511)	Percheron
3782	A. B. Holbert	Greeley	Duc 51501 (60024)	Percheron
3783	A. B. Holbert	Greeley	Forban 51508 (66969)	Percheron
3784	A. B. Holbert	Greeley	Darius 51467 (65549)	Percheron
3785	A. B. Holbert	Greeley	Kalidor 51468 (65508)	Percheron
3786	A. B. Holbert	Greeley	Ajose 51469 (66225)	Percheron
3916	A. B. Holbert	Greeley	Stuntney Dunneford 1005 (9910)	Hackney
3915	A. B. Holbert	Greeley	Witcham Gabriel 1006 (9984)	Hackney
3914	A. B. Holbert	Greeley	Stuntney Nigger 1013 (9919)	Hackney
3913	A. B. Holbert	Greeley	Stnutney Changeable 1012 (9909)	Hackney
3912	A. B. Holbert	Greeley	Royal Coronet 1011 (8262)	Hackney
3911	A. B. Holbert	Greeley	Wintringham A. I. 1010 (8338)	Hackney
3919	A. B. Holbert	Greeley	Wood Paragon 1009 (9988)	Hackney
3909	A. B. Holbert	Greeley	Golden Dream 1007 (10036)	Hackney
3908	A. B. Holbert	Greeley	Jack Tar 1003 (10034)	Hackney
3907	A. B. Holbert	Greeley	Amber 1001 (10037)	Hackney
3927	A. B. Holbert	Greeley	King George 1004 (10035)	Hackney
3928	A. B. Holbert	Greeley	Wharram Wanderer 1002 (9971)	Hackney
3955	A. B. Holbert	Greeley	Baron Drege 1449 (25334)	Belgian
4000	A. B. Holbert	Greeley	Diomede 3237	French Coach
1551	Henry Goodhile	Manchester	Barney's Prince 10851	Clydesdale
4015	I. C. Odell	Greeley	Fox 9605	Shire
4017	A. B. Holbert	Greeley	Greeley 3164	French Coach
4224	A. B. Holbert	Greeley	Golden Dream 3170	Belgian
4192	W. A. Lang & Co.	Greeley	Pachs 2913 (15714)	Belgian
4200	C. H. Hull	Hopkinton	Alcos 47680	Trotter
4187	Geo. B. Lane & Son	Masonville	Duke 50227	Percheron
4186	Geo. B. Lane & Sons	Masonville	Dick 50226	Percheron
4169	Geo. & J. B. Nieman	Earlville	Philiste 2781	French Coach
4168	Geo. & J. B. Nieman	Earlville	Bistouri 53120 (66400)	Percheron
575	W. A. Lang & Co.	Greeley	Sultani 45122 (56900)	Percheron
933	W. A. Lang & Co.	Greeley	Captain de Luttre 2232 (Vol. 12, p. 286)	Belgian
4313	Geo. & J. B. Nieman	Earlville	Sir Thomas Lipton 6475	Shire
4345	A. B. Holbert	Greeley	Jaubert II 3184 (Vol. 12, p. 347)	Belgian

DES MOINES COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
165	Henry Broder	Mediapolis	Major 41821	Percheron
164	Henry Broder	Mediapolis	Alger 23049 (42014)	Percheron
163	Henry Broder	Mediapolis	Fusain 42804 (58230)	Percheron
82	James D. Smyth	Burlington	Entertainer 26774	Trotter
1228	James D. Smyth	Burlington	King Entertainer 0706	Trotter
795	John Sutcliff	Sperry	Selim 8970	French Draft
2251	Henry Heibner	Danville	Hard to Get 1350 (7356)	Shire
2407	Clyde Featherby	Yarmouth	Menominee 8531 (23494)	Shire
2360	J. H. Thie	Middletown	Autumn Haze 21682	Trotter
860	Burlington Percheron Horse Co.	Burlington	Cheri 9319	French Draft
3445	E. W. Romiller	Danville	Clermont 9997	French Draft
3583	J. R. Lamme	Middletown	St. Dillion 38375	Trotter
4093	Chas. Nealey	Danville	Jumbo 34605	Percheron

DICKINSON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
518	G. B. Wilson	Milford	Ludovicus 6412 (8932)	Percheron
373	J. H. Mills	Lake Park	Ignace 22888 (42345)	Percheron
355	P. S. Mott	Spirit Lake	Trim 32061	Percheron
110	G. R. Bryan	Spirit Lake	Superior 30324	Percheron
181	D. V. Palmer	Lake Park	Red Ensign 18330	Trotter
204	Clark L. Nicol	Milford	Prince of Clayton 4698	Clydesdale
437	G. N. Welch	Milford	King Capoul 38364	Trotter
574	H. H. & B. H. Overhocker	Milford	Verona Matchless 6483	Shire
406	P. Hagerty	Hagerty	Iams' Bon Ton 17443	Percheron
893	F. N. Reese & C. M. Varney	Terril	Talisman 27116 (45621)	Percheron
797	D. V. Palmer	Lake Park	Butor 25152 (44160)	Percheron
2475	Geo. Heldridge	Milford	Radis 29506 (48415)	Percheron
2476	Geo. Heldridge	Milford	Rainbow (8222)	Percheron
2547	Jas. Chapman	Terril	Adrien 29536 (46939)	Percheron
2555	D. V. Palmer	Lake Park	King Moak Jr. 42203	Trotter
838	A. R. Vangrendren	Lake Park	Wenona Marmion 4768	Shire
2358	E. F. Miller	Milford	Christopher C. 31413	Trotter
2881	Hugh Elliott	Lake Park	Sampson 22284	Percheron
3895	G. W. & C. C. Heldridge	Milford	Heldridge's Conquest 52410	Percheron
3894	G. W. & C. C. Heldridge	Milford	Heldridge's Medhurst 52414	Percheron
4035	D. V. Palmer	Lake Park	Justin 29671	Percheron
3697	D. V. Palmer	Lake Park	Wrestler Jr. 29323	Trotter
3893	James Chapman	Terril	Heldridge's Midas 52409	Percheron
1045	D. S. Blakey	Spirit Lake	Jacques 29716	Percheron
4080	P. S. Mott	Spirit Lake	Clovis 27093 (45307)	Percheron
2491	H. H. Overrocker	Milford	King Edward 6947	Shire
4228	C. F. Hanson	Superior	Prince of Richland 11912	Clydesdale
4208	Henry C. Floss	Terril	Keota Haute 24840	Percheron
4205	Heldridge Bros.	Milford	Silent M. 31415	Trotter
3091	C. L. Nichol	Milford	Brown L. 34543	Trotter
2592	G. P. Wilson	Milford	Black Lad 13512 (48980)	French Draft

DUBUQUE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
952	M. J. Noonan	Bernard	Croiseur 24675 (45290)	Percheron
953	M. J. Noonan	Bernard	Martial 42724 (60151)	Percheron
954	M. J. Noonan	Bernard	Briard 10794 (12252)	Percheron
1055	Thos. F. Connolly	Bernard	Midnight 44254	Percheron
1249	Jno. Connolly	Bernard	Caesar (60096)	Percheron
1344	Connelly & Kelley	Farley	Goldzil 23277	Trotter
1364	F. P. Kern	Dyersville	Danton 1258 (24346)	Belgian
1366	Anton B. Kern	New Vienna	Barn de Thisnes 1181 (17890)	Belgian
1453	C. D. Mills	Peosta	Charley M. 17137	Trotter
1465	Jno. Breitbach	Peosta	Militor 29986 (45039)	Percheron

DUBUQUE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1979	The Cascade Horse Co.	Cascade	Keota Dalrymple 31847	Percheron
1978	The Cascade Horse Co.	Cascade	Jolly 5230	Shire
1977	The Cascade Horse Co.	Cascade	Tam O'Shanter 8018	Clydesdale
2489	J. J. Hittemiller	Dyersville	Tom Sherwood 35157	Trotter
1914	Richardsville & Holy Cross Horse Co.	N. Buena Vista	Sultan Rion 2392 (Vol. 14, p. 483)	Belgian
2617	M. F. Barrett	Cascade	Keota Miteau 18871	Percheron
2618	M. F. Barrett	Cascade	Archer 41143 (60113)	Percheron
2619	M. F. Barrett	Cascade	Spender 43919 (58747)	Percheron
2620	M. F. Barrett	Cascade	Trois-Sous 1444 (25308)	Belgian
2625	Frank Kunkel	Dyersville	Abseon 1551 (21364)	Belgian
2626	Frank Kunkel	Dyersville	Gugus de la Bruyere 1653 (18990)	Belgian
2649	Ira Murphy	Dubuque	Baron Nitron 5202 32190	Morgan Trotter
2535	Ben Witter	Specht's Ferry	Herisson 46044 (62164)	Percheron
2823	Farley Belgian Horse Co.	Farley	Belle Face 1254 (12918)	Belgian
2864	Jacob Foxen	Dyersville	Laboureur II 1262 (21720)	Belgian
1886	New Vienna and Petersburg Horse Breeders' Association	Dyersville	Gustave 2475 (34418)	Belgian
940	R. J. Kennedy	Zwingle	Prince II (36894)	Belgian
3356	Dyersville Horse Co.	Dyersville	Courageux 31286 (48933)	Percheron
3502	James Wilson	Farley	Woodrain 41652	Trotter
4033	Petersburg Horse Co.	Farley	Brabander 3112 (51958)	Belgian
4076	Ben Witter	Specht's Ferry	Glencow 49728 (61640)	Percheron
3864	Luxemburg Belgian Horse Breeders' Ass'n	Luxemburg	Gusse de Genly 3015 (34560)	Belgian
3487	Hickory Valley Horse Co.	Dyersville	Eclatant 14800 (6401)	French Draft
4403	John Brietback,	Peosta	Banquit 50787 (58755)	Percheron

EMMETT COUNTY

397	Taylor & Kenline Bros.	Wallingford	Highland Dandy 22542	Percheron
297	B. H. Knipe	Armstrong	The Parrot 34862	Trotter
298	B. H. Knipe	Armstrong	Boss 20815	Percheron
310	T. E. Kent	Estherville	Grand Victor 30645	Percheron
862	A. J. White	Estherville	Paul 248	Oldenburg Coach
1011	Mathews & Dundas	Armstrong	Ormeau 22800 (42922)	Percheron
959	Estherville and Superior Horse Co.	Estherville	Ussy 29561	Percheron
1241	J. D. Weir	Huntington	Khedive 11651	French Draft
1242	J. D. Weir	Huntington	Gallopore 32604	Percheron
1421	R. E. Woods	Estherville	Pythian 3640	French Coach
2491	G. W. Small	Estherville	King Edward 6947	Shire
371	Robt. West & Walter Willett	Estherville	Cyclone 833	Belgian
863	Robt. & F. L. West	Estherville	Petronius 21143	Percheron
301	Robt. West	Estherville	Pluton II 1209 (21736)	Belgian
2445	Felix Kriebs	Huntington	Bud 11652	French Draft
2777	G. E. Moore	Wallingford	Docile 42910	Percheron
2778	G. E. Moore	Wallingford	Armando 46270	Percheron
2779	G. E. Moore	Wallingford	Pathologist 42202	Trotter
2780	G. E. Moore	Wallingford	Franklin Audubon 38936	Trotter
1240	Ben Johnson	Huntington	Plunger 32603	Percheron
3092	G. E. Moore	Wallingford	Howard Yorke 40259	Trotter
4041	G. W. Gideen	Emmet Co.	Baron de Sartalard	Belgian
4292	W. H. McClure	Dolliver	King 13722	Clydesdale
4444	E. S. Elsworth Est.	Dolliver	Golden King 13136	Clydesdale

FAYETTE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
296	Ashbaugh Bros.	Maynard	Brillando 29729	Percheron
5	J. C. Darnell	Randalia	Kansas King 13813	Percheron
573	R. & L. Oldfather	Arlington	Triomphe (59513)	Percheron
1178	John Peters	Oelwein	Bon Courage 42879 (57093)	Percheron
1208	Belgian Draft Horse Co.	Hawkeye	Plein D'Or 949 (16836)	Belgian
1209	G. A. Wescott	Arlington	Red Stripe 39043	Trotter
1256	J. B. & C. W. Turner	Randalia	Eris 2070 (16702)	Belgian
1296	G. D. Darnall	West Union	Allerian 21724	Trotter
1297	G. D. Darnall	West Union	American Russell 21723	Trotter
1298	G. D. Darnall	West Union	Goldfire 31395	Trotter
1299	G. D. Darnall	West Union	J. A. B. D. 40744	Trotter
1410	Allen Doty	Westgate	Baron 521	German Coach
1687	J. S. McSweeney	Oelwein	Cliquant 31281 (46680)	Percheron
1706	E. L. Nus	Arlington	Brown William 45816	Percheron
1707	E. L. Nus	Arlington	William Adelbert 7900	Shire
1708	E. L. Nus	Arlington	Demblon de Dick (32920)	Belgian
1709	E. L. Nus	Arlington	Botha de Wyn (33298)	Belgian
1981	Westgate Horse Co.	Westgate	Telemaque du Hazoir (28346)	Belgian
1986	Fred Field	Oelwein	Calvado 42500	Percheron
2029	E. L. Nus	Arlington	Big Ben 43401	Percheron
2245	Shaffer & Humphrey	West Union	Vigoureux 27390 (48267)	Percheron
2342	F. W. Keil	Oelwein	Cavalier 16207	Percheron
2068	**Henry Reicks**	St. Lucas	Martin d'Enixhe 2298 (36640)	Belgian
2524	Waucoma Horse Breeders' Ass'n.	Waucoma	Ravault 11285 (3477)	French Draft
2616	Geo. Connell	Fayette	Fanchon 14108 (6279)B.	French Draft
1699	J. W. Whitely Horse Co.	Fayette	Leopard of Oakhurst 8455 (21596)	Shire
3080	C. R. Ashbaugh & S. C. Stewart	Maynard	Avalon 45047	Percheron
3137	Gunder Horse Co.	Elgin	Vigoureux 27127 (46915)	Percheron
3160	E. T. Foley	West Union	Leon de Zellick (29564)	Belgian
3214	E. L. Nus	Arlington	Quality 15766	French Draft
3263	J. I. Phillips	Elgin	Marcus 43052	Percheron
3460	H. C. Gosse	Oelwein	Geant de Don 2666 (21912)	Belgian
3504	E. L. Nus	Arlington	Woodford 15275	Percheron
3635	W. E. Howard	Elgin	Pedro 49240	Percheron
4007	L. V. Humphrey	West Union	Voltaire 49243	Percheron
1400	E. U. Farr	Waucoma	Prince Telectable 11831	Clydesdale
4075	Belgian Draft Horse Co.	Hawkeye	Piston de Felny 2753 (40020)	Belgian
747	Oscar Glime	Arlington	Athel 17537	Trotter
1334	Alpha **Percheron** Horse Co.	West Union	Matelot 51665 (51468)	Percheron
3922	Elgian Belgian Horse Co.	Elgin	Sans Pariel 2210 (29606)	Belgian
2944	Chas. Gabel	Hawkeye	Lunesdale Matchless 6773 (19803)	Shire

FLOYD COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
134	G. E. Andree	Charles City	Rene II 21276 (42468)	Percheron
135	G. E. Andree	Charles City	Rempart 26915 (45839)	Percheron
276	Henry Moll	Rockford	Floyd Jim 43950	Percheron
275	Henry Moll	Rockford	Aiglon 26585	Percheron
274	Henry Moll	Rockford	Sampson 31414	Percheron
273	Henry Moll	Rockford	Molke XV 2299	German Coach
694	John Bishop	Nora Springs	Cleanthe Jr. 28127	Percheron
826	Marble Rock Horse Co.	Marble Rock	Bambinos 25024 (43012)	Percheron
1039	Albert Gates	Marble Rock	Hercule 43747 (55020)	Percheron
1305	Fred C. Krueger	Charles City	Durbin 32181	Percheron
1307	Fred C. Krueger	Charles City	New Cut 6900	Shire

FLOYD COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1308	Fred C. Krueger	Charles City	General Dewey 2047 (33324)	Belgian
1309	Fred C. Krueger	Charles City	Captain Jr. 1431	French Coach
1310	Fred C. Krueger	Charles City	Intrepide 645	French Coach
1332	Carbeiner & Barber	Marble Rock	Gaston Hemel (15918)	Belgian
1333	Carbeiner & Barber	Marble Rock	Evade de Peponghen 1887 (28074)	Belgian
1672	F. H. Leaman	Rockford	Success 4478	Percheron
1673	F. H. Leaman	Rockford	Voltaire 22526	Percheron
1696	L. M. Smith	Marble Rock	Ferris 25102	Trotter
2362	L. V. Humphrey	West Union	Forton de Zuevy (16362)	Belgian
2595	Fred C. Krueger	Charles City	Latourna 41879	Percheron
2596	Fred C. Krueger	Charles City	LaMont 42155	Percheron
2597	Fred C. Krueger	Charles City	Lavern 42039	Percheron
2598	Fred C. Krueger	Charles City	Voyageur 41599	Percheron
2690	H. J. Stoecker	Charles City	Quivit 2431 (36386)	Belgian
2825	Henry Moll	Rockford	Loubet 48225	Percheron
3565	Wm. Boyer	Charles City	Jay 41881	Percheron
2812	C. M. Anderson	Charles City	Monarch 25428	Percheron
4143	H. J. Stoecker	Charles City	Lafayette 43797	Percheron

FRANKLIN COUNTY

1422	West Side Horse Co.	Sheffield	Murrow Free Lance 7752	Shire
1170	C. J. Bigg	Sheffield	Emit Eversole 21620	Trotter
1138	J. S. Mulkins	Hampton	Elder Pom Pom 6599 (19587)	Shire
707	H. H. Marble	Hampton	Foudryeur 2202 (26756)	Belgian
1610	Henry Pralle	Latimer	Keota Allen 5802	Shire
1611	Fahrmann Sons & Paullus	Latimer	Garby 22666 (43490)	Percheron
1637	A. M. Craighton	Hampton	Sir Wilfred 9538	Clydesdale
1758	Chas. Harrison, P. J. Monahan & A. D. Stilson	Hampton	Barbazo (6010)	French Draft
2520	Geo. O'Terrill	Sheffield	Victor 43608	Percheron
2521	J. D. & P. Esslinger	Sheffield	Colin 27551 (48309)	Percheron
2577	J. P. Brown	Hampton	King 22597	Percheron
2695	N. Thomas	Sheffield	Montrave Rupert 10551	Clydesdale
2792	H. W. Ihlings	Geneva	Consonant (Vol. 7)	German Coach
2853	H. R. Esslinger	Chapin	Amboy 14330	French Draft
1871	A. C. F. Voy	Ackley	Horbling Shamrock 8664 (23929)	Shire
1945	John P. Peters	Ackley	Volta 50561 (62453)	Percheron
2910	G. H. Washburn	Hampton	Ben Storing 4841	Morgan
3419	N. J. Thomas	Chapin	French Rival 8948	French Draft
4084	N. J. Thomas	Chapin	General 50088	Percheron
4229	J. C. Arends	Alexander	Bilbouquet 22688 (42566)	Percheron
4279	O. E. Benson	Geneva	Carlos 22615	Percheron

FREMONT COUNTY

17	L. Chambers	Bartlett	Halle 198	Oldenburg Coach
18	L. Chambers	Bartlett	Sir Jacques 16018	Belgian
19	L. Chambers	Bartlett	Apollo 3247	Shetland
21	O. E. Coulter	Farragut	Roosevelt 35683	Percheron
68	Wm. C. Johnson	Randolph	Bob Chariton 31430	Trotter
69	Wm. C. Johnson	Randolph	Roscoe II 19422	Percheron
74	A. M. McMahill	Tabor	Cyrano (43606)	Percheron
124	S. A. Chambers, Secy	Anderson	Tullus 214	Oldenburg Coach
154	I. E. Burdick & W. H. Wadell	Farragut	Balanfal 35379	Percheron
240	Lee Meek	Riverton	Roosevelt 33172	Percheron

FREMONT COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
987	Fred H. Martin	Sidney	Prince 50265	Percheron
1065	Jas. H. Miller	Farragut	Pacifidue 40395 (48534)	Percheron
2153	Pleasant Grove Percheron Horse Co.	Sidney	Sansonnet 41411 (57672)	Percheron
2154	Percheron Knox Horse Co.	Knox	Duguesclin 41422 (57775)	Percheron
3030	Clover Wave Horse Co.	Hamburg	Lilas 40291 (57378)	Percheron
3435	C. W. Dodd	Randolph	King of Iowa 5648	Shire
3892	Frank Sells	Randolph	Mickey 45595	Percheron
4252	R. E. Waderquist	Randolph	Rejouis 54429 (67282)	Percheron

GREENE COUNTY

564	Schneider Bros	Grand Junction	Zanoni (25506)	Belgian
9	W. W. Anderson	Scranton	LaPerchie 30869	Percheron
408	Ira Batcheller	Paton	Sound Money 7050	Shire
407	Albert Head	Jefferson	Chief Ambassador 37525	Trotter
1216	L. L. Wright & J. E. Hammar	Scranton	Collegian 41317	Percheron
1397	E. H. Jackson	Jefferson	Constantine 20381	Percheron
1553	Thos. Toyne, Sr.	Adaza	Wayside Tarbroech 9838	Clydesdale
1614	Wm. Grivey	Dana	Breteuil 24815 (44482)	Percheron
1632	Percheron Horse Co.	Jefferson	Marius de Lil 1273 (19784)	Belgian
1626	C. Picht	Churdan	Prince 10236	French Draft
1625	C. Picht	Churdan	Gerant 22351 (42893)	Percheron
1647	R. N. Flack	Churdan	George 40782	Percheron
1698	Michael Coyne	Jefferson	Admiral Sampson 19976	Percheron
1374	Harry W. Cole	Cooper	Nicodemus 21754	Percheron
2326	F. B. Anderson	Jefferson	Gervais 47758 (55415)	Percheron
2066	R. N. Flack	Churdan	Attaban de Givry 2282 (Vol. 13)	Belgian
2478	G. A. Wiggins	Cooper	King Leopold 862	Belgian
2527	C. A. Flack	Grand Junction	Electeur 50858 (55883)	Percheron
2593	Chas. Holmes	Rippey	Bambin 21263 (41034)	Percheron
2858	Grand Junction Horse Co.	Grand Junction	Bonneval II 32327 (45505)	Percheron
2978	D. W. Holmes	Scranton	Lewiston 33861	Trotter
3008	D. R. Rittgers	Rippey	Echo's Chief 4590 (13026)	Shire
3012	Kendrick Percheron Horse Co.	Scranton	Lambert 44955 (52685)	Percheron
3022	Cornelius Picht	Churdan	Monarch 15404	French Draft
3023	S. D. Newcomb	Adaza	Bleu 2061 (29620)	Belgian
3024	S. D. Newcomb	Adaza	Thomas 14103 (6282)B	French Draft
3218	Joe Bridgett	Jefferson	Guyanolus 42981	Trotter
3251	Peter Renburg	Paton	Robespierre 32336	Percheron
3300	Chas. Holmes	Rippey	Keota Turo 18230	Percheron
3336	W. J. Custer	Jefferson	Domino 12169	French Draft
3465	Foster Bruntlett	Scranton	Keota Ralph 27651	Percheron
3578	L. H. Roberts	Paton	Paton Boy 8716	Shire
3630	Jas. E. Moss	Scranton	Marcus Miller 42031	Trotter
3631	James E. Moss	Scranton	Scranton 42331	Percheron
3242	Harvey Wise	Paton	Puckerup Prince Harold Jr. 8233	Shire
3923	Harvey Wise	Paton	Excelsior 8232	Shire
3647	Harry E. Cole	Cooper	Park 9521	French Draft
4059	Chas. James	Jefferson	Porthos VI 809	Belgian
4154	Hatfield & Fleck	Jefferson	Monitor 46074	Percheron
2401	J. W. Hillman	Dana	Cardiff 9918	Clydesdale
3322	A. S. Burk	Rippey	Porto de Houtain 1353 (18642)	Belgian
260	C. C. Berclay	Jefferson	Major II 26872	Percheron
4270	E. C. Elmore	Paton	Major de Merchantem 3164 (25492)	Belgian
4373	D. R. Rittgers	Rippey	Cirton Senator 8987 (20519)	Shire
4424	Cedar Percheron Norman Horse Co.	Adaza	Perpolian 47074 (63378)	Percheron

GRUNDY COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
892	Clay Township Percheron Horse Co.	Conrad	Touraine 40953	Percheron
1082	O. D. Hilmer	Reinbeck	Histro F. 35686	Trotter
1415	Miller & Shirk	Grundy Center	Bichon 40190 (51206)	Percheron
1427	Felix-Melrose Horse Co.	Conrad	Seduisant 29530 (45257)	Percheron
2007	P. J. Baasch	Conrad	B. Favori 41310	Percheron
2008	P. J. Baasch	Conrad	B. Success 43988	Percheron
2169	M. C. Pattee	Reinbeck	Paul 44695	Percheron
2222	Fred J. Frost	Grundy Center	Prince Cameron 10526	Clydesdale
2221	Fred J. Frost	Grundy Center	All Right 245	Oldenburg Coach
2257	Samuel Deitrick	Conrad	Tomtom (6025)	French Draft
2267	John Tjaden	Wellsburg	Brilliant 30572 ((47001)	Percheron
2042	South Felix Horse Co.	Conrad	Durand 41436 (60779)	Percheron
2757	W. C. Hiatt	Conrad	Negro 46183 (59429)	Percheron
2815	Canotier Percheron Horse Co.	Grundy Center	Canotier 45607 (53890)	Percheron
2847	T. K. Saul	Reinbeck	MacGill 8789	Clydesdale
2912	A. F. Weiss	Reinbeck	Bedford 141	Hackney
3225	Adolph Albert	Reinbeck	Vainqueur (Vol. 12)	Belgian
3285	Chas. Staveley	Reinbeck	Kirkland King 12226	Clydesdale
3366	Fred J. Frost	Grundy Center	Corbett 20356	Percheron
3365	Smith & Fearer	Grundy Center	Hyperion 46619 (52087)	Percheron
3387	Herman Redenius	Dike	Edler (Vol. 7)	Oldenburg Coach
3516	Herman Redenius	Dike	Dauphin 15156 (57653)	Percheron
2044	John Tjaden	Wellsburg	Nestor 41423 (64588)	Percheron
3853	Helmer DeBerg	Dike	Tiers 7302	East Friedland Coach
3854	Helmer DeBerg	Dike	Tiro (Vol. 7)	Oldenburg Coach
3855	Helmer DeBerg	Dike	Oki (Vol. 7)	Oldenburg Coach
4044	John Tjaden	Wellsburg	Horace 45261	Percheron
4045	John Tjaden	Wellsburg	Anacharsis 3628	French Coach
4068	Holland Belgian Horse Co.	Holland	Sapeur 48868	Percheron
4101	Melrose & **Felix** Township Horse Co.	Conrad	Casimir 51827 (58109)	Percheron
4267	John Lister	Conrad	Willis 54405	Percheron
4372	T. W. Huismann	Grundy Center	Sifflot 53288 (65652)	Percheron
4425	Favor Horse Co.	Grundy Center	Favors 35701	Percheron

GUTHRIE COUNTY

4426	Frank Snow	Reinbeck	Mahomit George 48485	Percheron
1091	Hackney Horse Co	Panora	Conroy 633 (8423)	Hackney
1187	J. M. Sheehan	Stuart	Amant 24448 (42918)	Percheron
1203	H. C. Miner	Stuart	Blaisdon Luck 5385 (14992)	Shire
769	Gilman J. Turner	Panora	King Cole 5218	Shire
770	Gilman J. Turner	Panora	Annas 41370 (56958)	Percheron
692	James E. Junk	Stuart	Rocher 40091 (46496)	Percheron
696	Wichita Blegian Horse Co.	Wichita	Brilliant de Hemptinne (15692)	Belgian
572	A. D. Dickey	Jamaica	Eastern Topman 6308	Shire
46	Yale Draft Horse Co.	Yale	Compagnon 1298 (24830)	Belgian
1576	C. B. McGinnis	Casey	Haven's Pride 12534	Clydesdale
47	Yale Draft Horse Co.	Yale	Diamont 11532 (44766)	French Draft
48	I. C. Sheets	Yale	Midday Sun 34656	Trotter
109	J. T. Wasson	Panora	Teddy R. 0627	Trotter
101	Jamaica Horse Co.	Jamaica	Corisier 29485 (45168)	Percheron
1567	J. B. Foltz	Stuart	Adair Medium 31596	Trotter
1598	S. M. Ash	Bayard	Victor Hugo 42976	Percheron
2109	Jas. H. Pearce	Stuart	Lallie 7507	Shire
2118	J. M. McPherson & Son	Stuart	Richard Mac 37313	Trotter

GUTHRIE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2119	J. M. McPherson & Son	Stuart	McMahon 22174	Percheron
2327	H. A. Saemisch	Jamaica	Flambart 40741 (58618)	Percheron
2612	D. W. Anderson	Bagley	Dewan 41929	Trotter
2613	D. W. Anderson	Bagley	Lextus 41930	Trotter
2668	S. J. Kirkpatrick & F. W. Kading	Casey	Babillard 12924 (53529) P	French Draft
2820	S. B. **Keating** and J. S. Low	Stuart	Sultan 18400	Percheron
2844	A. E. Colby	Guthrie Center	Shadalmont 25535	Trotter
2893	J. B. Foltz	Stuart	Tartan 12024	Clydesdale
2907	A. G. Sodaberger	Casey	Baron's Hope 12023 (11606)	Clydesdale
2936	Jerry Dewan	Bayard	The Bishop 30326	Trotter
1711	J. F. Maddick	Panora	Massoud 946 (16918)	Belgian
3002	Chas. A. Reed	Menlo	Jocoon 44954	Trotter
3052	Bear Grove Percheron Horse Co.	Bear Grove	Quande Meme 34246 (45888)	Percheron
693	J. F. Armentrout & P. McDaniels	Stuart	Val St. Pair 3184	French Coach
3232	Wilson Bros.	Menlo	Iowa Sphinx Jr. 33654	Trotter
3233	Menlo Horse Co.	Menlo	Pernod 40015 (53570)	Percheron
3239	F. J. Boyd	Menlo	Van Toler 36478	Trotter
3249	Leroy Culbertson	Panora	Black Knight 12663 (13244)	Clydesdale
3302	G. B. Hughes	Bagley	Stuntney Facitus 7937 (22836)	Shire
3440	J. B. Brown	Guthrie Center	Finghall 12568 (13245)	Clydesdale
3449	Pioneer Draft Horse Co.	Guthrie Center	Highland Chieftain 11479	Clydesdale
3477	Elliott Compton	Stuart	Red McKee 42694	Trotter
3648	Wesley Willey	Monteith	Creston Ben 5948	Shire
3896	J. S. Low	Stuart	Servine 15351	French Draft
571	Clayton Miller	Yale	F. Northway 20634	Trotter
3994	Wm. Morgan	Jamaica	Franklin 9631	French Draft
3995	Wm. Morgan	Jamaica	Avenir de Boingt 2754 (40802)	Belgian
3902	Jacob Haupert	Jamaica	Adour 16517	French Draft
3901	A. D. Dickey	Jamaica	Gallant 16519	French Draft
4085	Henry Campbell	Stuart	Kadour 31222 (45167)	Percheron
4110	John Noland	Stuart	Black Acme 13019 (12855)	Clydesdale
4133	C. B. McGinnis	Panora	Couquetier 51369 (65098)	Percheron
4201	J. F. McNama	Casey	King's Pride 9093	Shire

HAMILTON COUNTY

327	Geo. H. Daniels	Webster City	Phil Frye 42574	Trotter
515	Marion Horse Co.	Stratford	Renard 27115 (45189)	Percheron
499	L. C. Rood	Webster City	Sir William R. 0729	Trotter
115	Naylor & Milburn	Stratford	Sans Gene 40039 (45012)	Percheron
177	E. C. Brewer	Stanhope	Milord (21662)	Belgian
62	E. T. Friedrich	Stratford	Merry Morgan 5032	Morgan
63	S. J. Cottington	Stratford	Commodore 7741	Shire
28	F. C. Ruegnitz	Stratford	Parson 2964	Shetland
11	Carl Bentson	Jewell	Diamond Dick 2608	French Coach
581	Belgian Horse Co. of Homer	Stratford	Copian (33172)	Belgian
561	E. C. Brewer	Stanhope	Prince Charming 10801	Clydesdale
686	Wall Lake Horse Co.	Jewell	Dessinateur 31050 (46073)	Percheron
631	F. C. Gearhart	Ellsworth	Silver Seal 31379	Trotter
630	F. C. Gearhart	Ellsworth	Distingue 22349 (42854)	Percheron
842	J. C. Cochran	Jewell	Keota Emperor 21670	Percheron
1068	Bendix Olsen	Stanhope	Prince 19179	Percheron
1404	Stanhope Horse Co.	Stanhope	Keota Emperor 22123	Percheron
1529	John Ely	Webster City	Aurillac 23066 (44571)	Percheron
1759	Helmick & Son	Webster City	Carlin 27816 (48389)	Percheron
2300	Frank Ross	Blairsburg	Oscar 26933 (45805)	Percheron

HAMILTON COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2331	Swanson & Rodine	Stratford	Bijouti 1843 (26488)	Belgian
2337	Ward Deffenbaugh	Webster City	Fayette Duluth 1519	Saddler
2463	J. F. & Sam De France	Webster City	King Al 42749	Trotter
2464	J. F. & Sam De France	Webster City	Lerian 44072	Trotter
2756	A. C. Henderson	Williams	Mon Caprice 2620 (25434)	Percheron
100	John T. Omvig	Randall	Torpilleur 27849 (44008)	Percheron
1770	Peter Hove	Stanhope	Envoy 28264	Percheron
3097	G. W. Pearson	Ellsworth	Chelsea 41930	Percheron
3188	Dennis Murphy	Williams	Black Diamond 24314	Percheron
3189	Dennis Murphy	Williams	Beatem 40667	Percheron
3644	Swanson & Rodine	Stratford	Keota Dan 18214	Percheron
3690	E. S. Pringle	Webster City	Boule du Chenoy (18130)	Belgian
4014	Cottington & Smith	Stratford	Moulton Columbus 5816 (18226)	Shire
1666	Stratford Percheron Horse Co.	Stratford	Grevy 41272 (57201)	Percheron
4198	J. C. Arends	Alexander	Premier 54070	Percheron
4417	Andrew Caruth	Williams	Mouchon III 947 (18178)	Belgian
4490	A. B. Staples	Ellsworth	Orcarlinus 37145	Trotter
785	John Ely	Webster City	Illinois Lad 24044	Percheron
4482	John Ely	Webster City	Direction Jr. 47863	Trotter

HANCOCK COUNTY

292	A. D. Paine	Kanawha	Amboy 26664	Percheron
238	Belgian Horse Co	Goodell	Coran de Taverne (18218)	Belgian
456	A. Chisek	Garner	Kilburn Prince 9539	Clydesdale
429	L. E. Faber	Miller	Dick Abbot 5331	Shire
641	J. N. Sprole	Garner	DeNavaro 12619	French Draft
1100	Britt Belgian Horse Co.	Britt	Buffalo (16808)	Belgian
1131	Klemme Horse Co	Klemme	Styx (24964)	Belgian
1163	W. H. Greimann	Garner	Ajax 1061 (21446)	Belgian
1198	Ed Williams	Kanawha	Ganymede 1198	Clydesdale
1651	Nelson Peterson	Britt	Historian 45173 (59177)	Percheron
2482	Twin Lake Horse Co.	Goodell	Flup 1789 (21832)	Belgian
2635	Klein Bros.	Goodell	Veritable 27283 (48352)	Percheron
2755	Orthel Township Horse Co.	Britt	Osprey II 22417	Percheron
2868	P. R. Gilligan	Kanawha	Clampin 22616 (42780)	Percheron
3047	Nels Pederson	Kanawha	Prince 42776	Percheron
1311	E. F. Klein	Britt	Star Abbott 16679	Trotter
3534	Paul Dorow	Crystal Lake	Raven 12634	French Draft
2393	John Fitzpatrick	Britt	Era 8380 (20468)	Shire
4243	D. M. Conlan	Goodell	Victor 15190	French Draft

HARDIN COUNTY

337	C. H. Comly	Iowa Falls	Wyatt 4739	Morgan
354	Jos. Caillard	Iowa Falls	Paul 280	Belgian
667	J. T. Glenn	New Providence	Marengo 40159	Percheron
1120	W. A. McBride	Alden	Coad 41029	Percheron
1121	W. A. McBride	Alden	Pluton de Liroux (23044)	Belgian
1145	R. T. Hamilton	Iowa Falls	Moncey 44746 (51661)	Percheron
1426	Rezin Kennedy	Iowa Falls	Coxey 247	Oldenburg Coach
1454	E. H. LaTeer	Alden	Molay 13965 (19005)	Percheron
1455	E. H. LaTeer	Alden	Williams's Brilliant 30176	Percheron
1510	Wheeler & Turner	Iowa Falls	Rustachio 19803	Trotter
1618	D. D. Goodenough	Iowa Falls	Hartington 4237	Trotter
1733	Telko & Sietsema	Ackley	Royal S. 9008	Clydesdale
1782	J. H. Bales	Eldora	Percy Woodside 41028	Percheron

HARDIN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2038	Seward Bros	New Providence	Modell 45589	Percheron
2149	Christ Risse	Hubbard	Keota Lion 7831	Shire
2254	Leo B. Marks	Eldora	Norve A. 0784	Trotter
2255	Leo B. Marks	Eldora	Goldfinder 9701 20320	French Draft and Percheron
712	J. T. Glenn	New Providence	Stuntney Joab 6617	Shire
2636	D. H. Faris	New Providence	Highland Berdell 43387	Percheron
2468	J. E. Bailey	Iowa Falls	Prince Albert 4725	Morgan
2470	J. T. Glenn	New Providence	Anthracite 47226	Percheron
2471	J. T. Glenn	New Providence	St. Ives II 8904 (10333)	Shire
2901	J. B. Fuller	Alden	Jo 41854 (63425)	Percheron
2994	G. F. Howard	New Providence	Sampson Jr. 42905	Percheron
3017	E. S. Ellsworth Estate	Iowa Falls	Lee Roy 45216	Percheron
3018	E. S. Ellsworth Estate	Iowa Falls	Ruvier 45552	Percheron
3078	Fred Gehrke	Alden	Mouron (25496)	Belgian
3098	O. J. Lacey	New Providence	Ussy 14858 (59254)P	French Draft
3096	W. L. Thornton	New Providence	Major L. 42429	Percheron
3095	Bales & Johnston	New Providence	Senator A. 42428	Percheron
3228	Samuel A. Tisher	Alden	Silver 9491 42112	French Draft and Percheron
3367	Anson Miller	Eldora	Willi 4273	German Coach
3362	Eclipse Horse Co.	Ackley	Eclipse 35480	Percheron
3371	Myers Bros.	Whitten	Combre 24026	Percheron
3372	Myers Bros.	Whitten	Keota Benjamin 44752	Percheron
3474	G. G. Pritchard	Alden	Don Alesor 44149	Trotter
3475	Lewis & Pritchard	Alden	Earl of Alden 43471	Trotter
2062	G. F. Pemberton	Iowa Falls	Bismark de Rochefort 2226 (30548)	Belgian
3660	Enoch Warman	Alden	Trouville 46435 (62970)	Percheron
2572	S. O. Welch	Union	Jumbo 9153	French Draft
3746	Robt. Wilkinson	Iowa Falls	William D. 5465	Morgan
4018	J. F. Howard	New Providence	Papillon 42137 (65354)	Percheron
4115	Seward Bros.	New Providence	Abel 47841	Percheron
4257	D. H. Faris & Sons	New Providence	Highland Valma 41825	Percheron
4402	Union Draft Horse Co.	Union	Sultan 26066	Percheron

HARRISON COUNTY

531	A. C. Briggs	Missouri Valley	Ben Lawers 1542 (2594)	Clydesdale
532	Missouri Valley and Beebeetown Horse Co.	Missouri Valley	Violent 2877	French Coach
533	Missouri Valley Percheron Horse Co.	Missouri Valley	Arcachon 25050 (45461)	Percheron
534	Beebeetown Percheron Horse Co.	Missouri Valley	Oiseau 31312 (48724)	Percheron
105	C. W. Reed	Woodbine	Mediumwood 19747	Trotter
148	Geo. W. Crewdson	Woodbine	Leo (23586)	Belgian
112	J. T. Smith	Woodbine	Victor 21809	Percheron
320	W. A. Smith	Woodbine	King L. 28814	Trotter
319	W. A. Smith	Woodbine	H. D. 40324	Trotter
291	D. W. Bennett	Woodbine	Mont-Joie de Ragnies (25572)	Belgian
467	Percheron Horse Horse Co.	Woodbine	Email 31319 (46074)	Percheron
44	J. Knowles	Logan	Paltu 28352	Trotter
468	Coach Horse Co.	Woodbine	Varreville 3284	French Coach
722	C. C. Booth	Little Sioux	Row On 33805	Trotter
814	P. C. McNally	Dunlap	Glenfinlass 35223	Trotter
1369	Cardinal Percheron Horse Co.	Magnolia	Cardinal 24733 (43692)	Percheron
1530	Jas. H. Blackwood	Dunlap	Tronda's Chieftan 10291	Clydesdale
1550	W. D. & W. S. Howard	Logan	Stuntney King Edward 8414	Shire
1636	P. C. Stire	Logan	Loxley 40092	Trotter

HARRISON COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1752	V. C. Atwell	Little Sioux	Instard 20494	Percheron
2493	F. A. Vore, keeper	Dunlap	Boulanger 24425 (43615)	Percheron
2514	Persia Percheron Horse Co.	Persia	Cadix 25732 (43771)	Percheron
2662	Wm. L. Carr	Logan	Scott 7966	Shire
2842	Pherguson Bros	Dunlap	Fortune 41633	Percheron
3073	S. N. Dale	Logan	West Phallmont 43838	Trotter
3074	Harvey Dale	Logan	Delwood 43965	Trotter
3130	Pherguson Bros	Dunlap	Dax 2304 (30738)	Belgian
3456	C. F. Putman	Woodbine	Cartouche 35811	Percheron
4152	E. F. Ogden	Logan	Robert McCaskey 41446	Trotter
4120	F. Hall	Orson	Mignon 46158 (59412)	Percheron
2899	Virgin Kinart	Missouri Valley	Fortune Hunter 20394	Percheron
4316	R. R. Mickle	Kamrar	Hardi de Meerbeke (Vol. 12, p. 646)	Belgian
4346	W. W. Hollenbeck	Logan	Champion II 7866	Shire
4370	Christenson Bros	Dunlap	Abricot 20481	Percheron
4180	Guyett & Son	Woodbine	Marquis de Altre 2400 (37036)	Belgian

HENRY COUNTY

328	Wm. H. Nugen	New London	Edward Bush 35987	Trotter
329	Wm. H. Nugen	New London	Quinton Cross 38154	Trotter
673	O. C. Newbold	Hillsboro	Iowa Jim 11903	Clydesdale
787	Dunham Wright & P. J. Hanks	New London	Kalos 14439	French Draft
851	Ed C. Herron	Mt. Union	Heron de Vryheld 1293 (21346)	Belgian
955	F. W. Walters	New London	Prince Albert 11577	French Draft
899	C. C. Anderson	Mt. Pleasant	Alexander 7218	Shire
1040	Frank A. Bird	Mt. Pleasant	Harm Vandecar 30072	Trotter
1081	Maurice Green	Wayland	Arcturus 15798	Trotter
898	C. C. Anderson	Mt. Pleasant	Lord Commodore 8388	Shire
897	C. C. Anderson	Mt. Pleasant	Lord Gentry 8389	Shire
896	C. C. Anderson	Mt. Pleasant	Lord Claymont 7039	Shire
895	C. C. Anderson	Mt. Pleasant	Lord Curzon 7038	Shire
879	H. H. Hills	Mt. Pleasant	Cherreau 42473 (48488)	Percheron
1144	H. H. Hills	Mt. Pleasant	Lucky Cross 10861	Trotter
1143	H. H. Hills	Mt. Pleasant	Fortune Hunter 9202	French Draft
1142	H. H. Hills	Mt. Pleasant	Admiral 33035	Percheron
900	Swedesburg Horse Co.	Swedesburg	Bernard 34307 (53267)	Percheron
1231	Jacob Beckley	Hillsboro	Wayside Smuggler 11857	Clydesdale
1232	Jacob Beckley	Hillsboro	Keota King 19437	Percheron
1226	J. J. O'Laughlin	Rome	Trevoux 12547	French Draft
1322	Mt. Hamil Horse Co.	Hillsboro	Damier 27119 (45993)	Percheron
1424	D. H. McCahan	Mt. Pleasant	Keota Prince 4965	Shire
1525	L. C. Wenger	Wayland	Superb 12507	French Draft
1526	Wenger Bros	Wayland	Fordy Duke 7584 (21432)	Shire
1670	Lee Ernst	Trenton	Nally 10010	French Draft
1828	C. M. Clark	Mt. Pleasant	Cecilian 17563	Trotter
1988	Dudolph & Walter Lund	Winfield	Winifred's Prince 12777	Clydesdale
2138	Ross S. Wright	Mt. Pleasant	Ambassaduer 43068	Percheron
2364	John Schadt	Rome	Keota Knight 8806	Clydesdale
2418	C. C. Anderson	Mt. Pleasant	Lord Roosevelt 8735	Shire
2516	Nelson Cornick	Mt. Pleasant	John 15033	French Draft
2522	Jesse D. Cooper	Winfield	Merriman 5376	Shire
2523	Jesse D. Cooper	Winfield	Javelot 23051 (43301)	Percheron
1788	Jesse D. Cooper	Winfield	Hannibal 41728	Percheron
2564	K. S. Mills	Mt. Pleasant	Gold Eagle 5301	Shire
2584	Wenger Bros	Wayland	Cyrano 50487 (45628)	Percheron
2416	John Shriver	New London	Creston Archie 3d 6659	Shire
2954	C. C. Anderson	Mt. Pleasant	Novice 22614 (43366)	Percheron
2979	H. E. Watts	Salem	Agricole 41318	Percheron
3049	Wm. A. Harshbarger	Mt. Pleasant	Romeo 45175	Percheron
3161	W. P. Blackford	Hillsboro	Stuntney Sanrouge 840 (9033)	Hackney

HENRY COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3162	Jacob Beckley	Hillsboro	King 15626	French Draft
3234	New London Horse Co.	New London	Tyrolien 2460	French Coach
3235	New London Horse Co.	New London	Pomard 24489 (44564)	Percheron
342	W. A. Tade & Sons	Hillsboro	Rotrou 47082 (61541)	Percheron
3339	H. C. Hampton	Hillsboro	Pat Brown 28280	Trotter
3338	H. C. Hampton	Hillsboro	Joe Diamond 43202	Trotter
3919	O. C. Newbold	Hillsboro	Sir Archibald 12952	Clydesdale
3920	John A. Swan	Winfield	Ethelbert 12025 (12969)	Clydesdale
4001	A. L. Garrels	Mt. Union	Lamy 14853 (53952)	French Draft
4026	J. W. Graber	Salem	De Vallon 14780	French Draft
4069	A. L. Garrels	Mt. Union	Sans Tache (11724)	Percheron
2955	Henry Burky	Mt. Pleasant	Happy Tom 8012	Shire
4322	R. C. Dutton	Mt. Pleasant	No Heels 45207	Trotter
4427	Everett Beckwith	Mt. Pleasant	Ericeirs 14971	French Draft
4428	Everett Beckwith	Mt. Pleasant	Kewango 15604	French Draft
4429	Everett Beckwith	Mt. Pleasant	Seigneur 51451	Percheron
4483	Ira Redfern	New London	Romu 48007	Percheron

HOWARD COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
398	P. J. Gesell	Elma	Bonton 9067	French Draft
549	Protivin Percheron Horse Co.	Protivin	Saumur 25031 (43633)	Percheron
138	Keune Horse Co.	Cresco	Talmage 1069	Belgian
827	C. A. L. Loomis	Chester	Wildwoods Ideal 1530	Belgian
828	C. A. L. Loomis	Chester	Black 2221 (29464)	Belgian
997	F. A. Eckstein & Bro.	Chester	Cyclone II 1375	Belgian
998	F. A. Eckstein & Bro.	Chester	Macadam Jr. 1841	Belgian
999	F. A. Eckstein & Bro.	Chester	Ideal Jr. 1840	Belgian
1000	F. A. Eckstein & Bro.	Chester	Maxy 1802 (14698)	Belgian
1001	F. A. Eckstein & Bro.	Chester	Macadam 718	Belgian
1371	Martin Jones	Cresco	Le Meniere (15409)	Percheron
1474	Maple Leaf Belgian Draft Horse Co.	Elma	Paul Max (27498)	Belgian
1645	Clover Leaf Horse Co.	Cresco	Epernon 34916 (46591)	Percheron
53	P. J. Herold	Cresco	Regale 2082	French Coach
2252	Albion Horse Co.	Bonair	Buridan 27105 (48288)	Percheron
2258	T. J. Richards	Lime Spring	Barney Amber 10888	Clydesdale
2259	J. W. Davis & I. Roberts	Lime Spring	Nellie's Pride 11867	Clydesdale
2976	S. A. Converse	Cresco	The Governor 2976	Clydesdale
2977	S. A. Converse	Cresco	Prince James 8932	Clydesdale
3013	Geo. Moore	Elma	Trompeur 31248 (48679)	Percheron
3065	Saratoga Horse Co.	Cresco	Libaros 27378 (44843)	Percheron
3509	M. E. Weighill	Cresco	The Fox 34703	Trotter
3581	F. A. Eckstein	Chester	Boulet de Canon 2524	Belgian
4256	F. A. Eckstein	Chester	Epluche 42067 (60521)	Percheron

HUMBOLDT COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
169	R. W. Taylor	Bode	Sampson 7853	Shire
90	Brown Bros. & Beck	Humboldt	Cokeril 1800 (29592)	Belgian
290	Harry Bratton	Ottosen	Captain Hopetown 11442	Clydesdale
1067	B. G. Olson	Humboldt	General Sherman 27897	Percheron
1189	Rutland Horse Co	Rutland	Pollux II 1371 (18216)	Belgian
1435	Moen & Anderson	Humboldt	Guepin 27159 (44716)	Percheron
1744	Boone Percheron Horse Co.	Renwick	Reflescible 41866 (48870)	Percheron

HUMBOLDT COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2359	Brown Bros. & Beck	Humboldt	Major de Corroy 2533 (24426)	Percheron
2360	Brown Bros. & Beck	Humboldt	Corail 14861 (62679) P	French Draft
2433	P. L. DeSmidt	Humboldt	Romance 26395	Percheron
2628	L. E. Dolder	Pioneer	Thomas 34371 (46441)	Percheron
2833	Renwick Shire Horse Co.	Renwick	Stuntney Defiance 2853	Shire
2938	Byron Brink	Renwick	Bob Sheldon 38354	Trotter
3146	A. J. Hayden	Humboldt	LaPerche 45327	Percheron
3483	F. F. Kelling	Humboldt	Tessino (13903)	German Coach
3484	F. F. Kelling	Humboldt	William 1046	German Coach
3163	Belgian Draft Horse Co.	Pioneer	Charlemange 1799 (12290)	Belgian
4097	Brown Bros. & Beck	Humboldt	Black Jack II 9389	Shire
4433	C. E. Myers	Humboldt	Judge Transit 47746	Trotter
4281	A. K. Cleveland	Humboldt	Frank Thornton 45353	Trotter
3798	A. G. Cooper	Ottosen	Bon-Valet 51497 (59946)	Percheron
3145	John Seaman	Bradgate	King Unique 43164	Trotter

IDA COUNTY

95	E. F. Peffer	Battle Creek	Me Lud Conkling 34924	Trotter
129	Anton Grones	Holstein	Andree 1159	German Coach
130	Holstein Horse Co.	Holstein	Vernis 30421 (46609)	Percheron
167	J. F. Parks	Arthur	Nigrier 44625	Percheron
35	Elmer C. Somers	Ida Grove	Brynes 25936	Trotter
45	J. Y. Crawford	Ida Grove	Creston Prince 35728 10667	Percheron and French Draft
51	John Crawford	Holstein	Marron De Vissoul 1350	Belgian
52	John Crawford	Holstein	Napoleon II 273 (24818)	Belgian
23	Geo. H. Nailer	Battle Creek	Harry 9378	French Draft
26	V. D. Wolcott	Battle Creek	Ibrahine 11520	French Draft
27	V. D. Wolcott	Battle Creek	Du Chaillu 11199	Trotter
83	Arthur Horse Co.	Arthur	Fondant 40141	Percheron
1353	Elmer C. Somers	Ida Grove	El Somero 0754	Trotter
1481	P. McGuire	Holstein	Duke 43554	Percheron
1482	P. McGuire	Holstein	Cinchona 20391	Percheron
1483	P. McGuire	Holstein	T. R. K. 11837	Trotter
1484	P. McGuire	Holstein	Romeo 23495	Percheron
1485	P. McGuire	Holstein	Sweet King 40977	Trotter
1727	Waldo & Ray Clapsaddle	Galva	Alex of Odebolt 11754	Clydesdale
928	Ida Grove Horse Co.	Ida Grove	Danton 1020	Belgian
1731	B. M. Hester	Ida Grove	Black Prince 4324	Shetland
2024	H. P. Rice	Holstein	Monaco 14100	French Draft
2776	Galva Union Horse Co.	Galva	Pianiste 44474 (58181)	Percheron
2088	Galva Horse Co.	Galva	Sasie 46060 (51718)	Percheron
2338	C. A. Shimerda	Battle Creek	Ringmaster Jr. 8417	Shire
2583	F. O. Peterson	Galva	Money Maker 7874	Shire
1776	Galva Shire Horse Co.	Galva	Blaisdon Victor 7110 (20267)	Shire
3247	John H. Brunjes	Arthur	Gamway 45286	Trotter
3370	Geo. F. Nailor	Battle Creek	Perkins 48314	Percheron
3674	A. Sykes	Ida Grove	Olga 22766 (43283)	Percheron
3739	August Hunwardensen	Battle Creek	Golden Era 4601	Morgan
2969	Baxter Bros	Galva	Buffalo 41563 (63938)	Percheron
2589	A. B. Bell	Ida Grove	Wenona Swell 22991	Percheron
4467	J. F. Parks	Arthur	Cardiff 53744	Percheron
3247	Hinds & McCrea	Arthur	Gamway 45286	Trotter
125	Draft Horse Co. of Ladora	Ladora	Robert de Lillo (25508)	Belgian

IOWA COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
126	Draft Horse Co. of Ladora	Ladora	Caesar de Wodecg (29436)	Belgian
127	Draft Horse Co. of Ladora	Ladora	Keota Edward 29654	Percheron
239	W. V. Hixson	Marengo	Rosemack 10406	Clydesdale
778	Chas. Boland	Williamsburg	Kerzerah 33729	Percheron
865	W. V. Hixson	Marengo	Palmerston 9728	Clydesdale
864	W. V. Hixson	Marengo	Mac Delightful 2d 11314	Clydesdale
973	Henry Wiedemeier	Millersburg	Bon Roister 6065 (17790)	Shire
1028	Millersburg Coach Horse Co.	Millersburg	Eithon 2085	French Coach
1009	Williamsburg Draft Horse Co.	Williamsburg	Piston 829 (13000)	Belgian
871	Samuel E. Harper	Victor	Scott Gamaleon 31292	Trotter
1384	R. M. Wyant	Millersburg	Jay Field's Hasty 36018	Trotter
1405	J. F. Talbot	Williamsburg	Keota Ranford 29656	Percheron
1402	Francis E. Grim	North English	Dewey 5203	Shire
1450	Jacob E. Cox	Williamsburg	Boum 44470 (55162)	Percheron
1451	Jacob E. Cox	Williamsburg	Devinez (57137)	Percheron
1479	John B. Wyant	Marengo	Dandy E. 0847	Trotter
1518	W. H. Spratt	Parnell	Cambushinnie Prince Jr. 10861	Clydesdale
1519	W. H. Spratt	Parnell	Manor Surprise (16800)	Shire
1552	J. H. Schrader	Marengo	Gables Shamrock 6959 (Vol. 25)	Shire
2106	H. F. Lohman	Millersburg	Bayard X 30585 (48326)	Percheron
2509	W. E. Reynolds	Williamsburg	Flashwood 8066	Shire
2601	Koszta Horse Co.	Koszta	Tresor (55352)	Percheron
2204	Ladora Draft Horse Co.	Ladora	Caesar de Merchtem 2588 (36802)	Belgian
2653	Jonas Mantz	Williamsburg	Darius 44456 (51256)	Percheron
2654	Jonas Mantz	Williamsburg	Rival 26903 (45850)	Percheron
2675	A. J. Clark	Ladora	Scipion 41554 (63657)	Percheron
2689	Williamsburg Draft Horse Co.	Williamsburg	Bobby B. 15467	French Draft
2546	G. M. Ocheltree	Victor	Colonel O. 13297	French Draft
2731	Frank X. Conroy	Conroy	Joe Menary 43156	Trotter
2787	W. V. Hixson	Marengo	Baron Clifton 12611	Clydesdale
2788	W. V. Hixson	Marengo	Glenco 13334	Clydesdale
2790	W. V. Hixson	Marengo	Sefton 12331	Clydesdale
2883	J. P. Gunzenhauser	Williamsburg	Paul 19422	Percheron
2882	J. P. Gunzenhauser	Williamsburg	Julo 2151 (Vol. 12)	Belgian
2752	E. F. McArtor	North English	Nelson 1785	German Coach
1169	Roylander Horse Co.	North English	Roylander 30695	Trotter
2998	Ross J. Miller	North English	Printannier 28744 (47059)	Percheron
3032	Jonas Mantz	Williamsburg	Lord William II 5415	Shire
3057	J. D. Thomas	North English	Patwood 34296	Trotter
3221	A. J. Clark	Ladora	Zoo Zoo B. 36336	Trotter
3286	J. G. Hanson	Williamsburg	The Exquisite 36730	Trotter
2676	N. T. Wyant	Marengo	Julian 44709	Percheron
3343	W. D. Talbott	Marengo	Keota Hymen 31887	Percheron
3394	E. A. Simmons	Marengo	Coursier 2662 (18156)	Belgian
3416	Geo. Boyer	Victor	Lendit 25059 (42414)	Percheron
3427	Ernest Teggartz	South Amana	Prince of Pleasant Hill 23835	Percheron
3478	Jonas Mantz	Williamsburg	Confidence 795	Belgian
3520	Geo. Schuetterle	Marengo	Faucheur 13072	French Draft
3747	Theo. Moyekens, S. DeRycke and D. Landuyt	Marengo	Picador 28751 (48312)	Percheron
1008	T. J. Burns	North English	Baron Blantyre 9343 (10497)	Clydesdale
3985	John S. Torrence	Victor	Prince Reliable 8710	Clydesdale
4092	John R. Fitzer	Williamsburg	Loosegate Lord 8529 (22550)	Shire
4179	C. W. Voss	Williamsburg	Bury Client 8876 (23112)	Shire
4177	J. E. Cox	Williamsburg	Bryan II 52236	Percheron
4178	J. E. Cox	Williamsburg	Regulus 4089	French Coach

IOWA COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4176	J. E. Cox	Williamsburg	Manage 51877 (63689)	Percheron
4247	Bigler Bros.	Victor	Robin Ensign 11939	Clydesdale
2788	H. T. Bell	Marengo	Dale 12333	Clydesdale
4278	James E. Anderson	Victor	Warren Boy 47534	Trotter
867	T. J. Kilcoin	Victor	Mac Delightful 10759	Clydesdale

JACKSON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
374	Chris Boden, Jr.	Green Island	Foxie 20838	Percheron
375	Comte Percheron Horse Co.	Bellevue	Comte (46493)	Percheron
347	Chris Peterson	Miles	Lapin 30198 (46857)	Percheron
268	D. H. Anderson	Maquoketa	Cyclone 1852	Belgian
267	D. H. Anderson	Maquoketa	Brilliant III 1347	Belgian
266	D. H. Anderson	Maquoketa	Vonmore 22417	Trotter
265	C. D. Krepps & D. H. Anderson	Maquoketa	Woodford Russell 37964	Trotter
251	Cook & Depue	Miles	Coco 11360	French Draft
250	Miles Belgian Horse Co.	Miles	Blanqui de Mellemont (29368)	Belgian
285	Belgian Horse Co.	Bellevue	Bornival 1403 (19204)	Belgian
6	Ely & Robinson	Maquoketa	Monteleone 29178	Trotter
496	John Orr, Sec'y	Maquoketa	Romeo 23077	Percheron
644	Wm. Dunn	Bellevue	Beaudole III 33407 (47831)	Percheron
415	J. C. Dennison	Bellevue	Paralene 35112	Trotter
414	J. C. Dennison	Bellevue	Patrolist 40307	Trotter
786	Wm. F. Meinke	Maquoketa	Ardea 42216	Percheron
1092	J. F. Kunan	Sabula	Sans-Gradin 24731 (44668)	Percheron
1128	J. L. Ripple & W. W. Mayberry	Bellevue	Fenelon 25807	Percheron
1146	Roach Bros.	Preston	Patalma 37916	Trotter
1339	J. L. Hoffman	Lamotte	Bernard (13100)	Belgian
1527	Ed Farley	Preston	Clarion de Loyers 2174 (25506)	Belgian
1313	Wm. Schmadke	Preston	Nogeant II 25422	Percheron
1599	Jos. Eberle	Spragueville	Grove Paragon 2216 (7334)	Shire
2508	Sabula Belgian Horse Co.	Sabula	Coquet de Mellemont 2345 (Vol. 13)	Belgian
2606	Jno. & George Goepfert	Bellevue	Sir Bolivar 12535	Clydesdale
2716	Lamotte & Swingle Horse Co.	Lamotte	Miramar 31274 (48168)	Percheron
2850	Jerry Broderson	Maquoketa	Champagne 27439 (43154)	Percheron
3110	Geo. S. Flathers	Maquoketa	Dr. Kendall 22713	Trotter
3236	Fred Kelsall	Iron Hills	Bonaparte 19764 (43112)	Percheron
3380	Chas. Chapman	Lamotte	Delateur 14821 (64096)	French Draft
3435	O. E. Barnes	Baldwin	Plantagenet 23200 (44573)	Percheron
3523	Preston Percheron Horse Co.	Preston	Reuil 22707 (43472)	Percheron
3592	Wm. Gibson	Maquoketa	William Gibson 39323	Trotter
3689	Farmers Horse Co	Miles	Bock 45770 (61500)	Percheron
3876	J. C. Dennison	Bellevue	Paral 46729	Trotter

JASPER COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
99	James McKenzie	Baxter	Sandy McNab 11211	Clydesdale
341	Newburg Horse Imp. Co.	Newburg	Avril 31348 (46164)	Percheron
352	Lavelleur & Zachary	Prairie City	Aristote 44302 (55655)	Percheron
377	Oscar Wallick	Monroe	Keota Senator 9614	Clydesdale
473	M. C. Cramer	Monroe	Dewey 9634	French Draft
56	J. M. Furney	Prairie City	Rex 25630	Percheron
554	David A. Moffet	Prairie City	Robert 2098	French Coach
476	J. W. Munn	Newton	Prince Lucas 14363	Percheron
854	Frank Bruner	Prairie City	Keota-Gallipoli 33459	Percheron
807	C. S. Mershon	Newton	Baladin 29429 (46958)	Percheron

JASPER COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1267	D. C. Gifford Est	Prairie City	Pompee 27986 (46835)	Percheron
1268	D. C. Gifford Est	Prairie City	Dardaghan II 13181	French Draft
1555	Robert Roush	Monroe	Oberlin 19549	Percheron
995	J. P. Taylor	Sully	Twister 20753	Trotter
996	J. P. Taylor	Sully	Twis G. B. 996	Trotter
1745	I. Coffee	Kellogg	Valeur 768	French Coach
2167	J. J. Whisler	Fairmont	Regal Marconi 39287	Trotter
2189	Eldredge Bros.	Sully	Garnet Wilkes Jr. 43307	Trotter
2324	Chas. Goeke	Baxter	Newton Harold 7649	Shire
2410	M. C. Cramer	Monroe	Arnold M. 15660	Trotter
2411	M. C. Cramer	Monroe	Matchfield Jr. 12634	Clydesdale
2459	Gibson West	Baxter	Seducteur 47205	Percheron
2457	Gibson West	Baxter	Wilhelm 23608	Percheron
389	A. D. Gipson & G. C. Butler	Baxter	Lapon 26724 (48351)	Percheron
956	Lavalleur & Taylor	Colfax	Monarch 13475	French Draft
2933	L. N. Mateer	Monroe	Arbitrator 47769	Percheron
2962	D. A. Moffet	Prairie City	Stanislas 15155 (62729)	French Draft
3061	Livingston Bros.	Monroe	Raymond 41181	Percheron
3179	H. W. Kloping	Newton	Gutemburg 41765 (60923)	Percheron
3202	Johnson & Kingdon	Prairie City	King William 12782	French Draft
3203	Johnson & Kingdon	Prairie City	Motus (56933)	Percheron
3204	Johnson & Kingdon	Prairie City	Newton Victor 6921	Shire
3222	Louie J. Altemeir	Newton	Wenona King 5260	Shire
3376	Margaret Gates	Newton	Newton King 40723	Trotter
3377	Margaret Gates	Newton	Scott W. Jr. 45377	Trotter
2854	J. C. Johnson Imported Horse Co.	Lynnville	Angers 40733 (49304)	Percheron
3535	Sugar Grove Horse Co.	Newton	Degourdi 45878 (65197)	Percheron
4031	Ira Smith	Monroe	Monarch 51801	Percheron
2458	Baxter & Round Grove Horse Co.	Baxter	Victor 47205	Percheron
3421	Geo. Eggert	Newton	Rampton Criterion II 8582 (23922)	Shire
4095	W. N. Talbot & Son	Sully	Keota Allen 44753	Percheron
4094	W. N. Talbot & Son	Sully	Gold Dust 12997	Clydesdale
4113	Chester Draft Horse Co.	Newberg	The Boss III 5416	Shire
4220	H. G. Bergman	Newton	Sioux Valley Chief 36324	Trotter
4218	H. G. Bergman	Newton	Favori 44998 (57219)	Percheron
4219	H. G. Bergman	Newton	Scott W. 36378	Trotter
4217	H. G. Bergman	Newton	Chicago 46195 (55823)	Percheron
4215	H. W. Klopping	Newton	Turcos 48449	Percheron
4190	Kellogg Belgian Horse Co.	Kellogg	Milton de Lessines 3122 (32634)	Belgian Draft
4188	Baxter & Malbourne Horse Co	Baxter	Caliph (12074)	Clydesdale
4298	Vern Wheeler	Newton	Brompton Boy 6534 (Vol. 24)	Shire
4300	John Laskewitz	Killduff	Keota Lambing 44762	Percheron
4299	Vern Wheeler	Newton	Gondler 3897	German Coach
4318	Oscar Wallick	Monroe	Orphan Boy 12254	Clydesdale
4323	P. H. Vanderwool	Newton	Trepan 32305 (45131)	Percheron
4336	Crawford & Griffin	Newton	Congolais 2814 (34314)	Belgian
4337	Crawford & Griffin	Newton	Neptune 632 (7940)	Hackney
4338	Crawford & Griffin	Newton	Accordeur 41764 (64706)	Percheron
4339	Crawford & Griffin	Newton	Loulaba 50782 (68247)	Percheron
4341	Crawford & Griffin	Newton	Calvados 53737 (68366)	Percheron
4342	Crawford & Griffin	Newton	Citoyon 52748 (69077)	Percheron
4382	C. E. Conley	Prairie City	Allegory 47813	Thoroughbred

JEFFERSON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
277	E. E. Myers	Packwood	Kilted Lad 3d 10353	Clydesdale
278	E. E. Myers	Packwood	Sully's Jim 44488	Percheron
279	E. E. Myers	Packwood	Reno 12483	French Draft
453	Harlan B. Macy	Pleasant Plain	Maceo 19881	Percheron
638	Batavia Belgian Draft Horse Co.	County Line	Duc II De Montfort 2424 (25232))	Belgian
742	Dr. J. V. Bean	Fairfield	Nebator 37751	Trotter
743	Dr. J. V. Bean	Fairfield	Sphinxceps 40238	Trotter
837	Libertyville Horse Co.	Libertyville	Abner 24261 (44604)	Percheron
901	F. K. Laughlin	Batavia	Governor 6199	Shire
966	John Larson	Fairfield	Junius of Fairfield 38063	Trotter
968	John Larson	Fairfield	Fairfield Short Legs 7262	Shire
967	John Larson	Fairfield	Fairfield Brother Bill 7832	Shire
969	John Larson	Fairfield	Fairfield Bumper 8332	Shire
971	Larson Shire Horse Co.	Fairfield	New Cut President 5705	Shire
1003	Daniel G. Dana	Fairfield	Judge Marshall 25791	Trotter
1220	E. P. Taylor	Fairfield	Romeo 35582	Percheron
1239	J. Lewis Mc-Cleary	Libertyville	Leonard 14677	French Draft
1221	E. P. Taylor	Fairfield	Laurent 19126	Percheron
1337	Chas. Stevenson	Veo	Keota Chilicoot 21662	Percheron
1438	Wm. Case & Co.	Fairfield	Capricieux 44459 (53278)	Percheron
1546	J. V. Bean	Fairfield	Bashneermont 5193	Morgan
1622	Sylvester Hadley	Packwood	Marquise 13702	French Draft
1654	Wm. Carmichael	Fairfield	Fred Bee 38946	Trotter
1658	Jas. Carmichael	Fairfield	R. D. Rex 37722	Trotter
1691	J. P. Campbell	Libertyville	Taupin 9022	French Draft
1692	J. P. Campbell	Libertyville	Le Roy 13007	French Draft
1728	Alex Hopkirk	Lockridge	Mark Dupont 10771	French Draft
1808	J. E. Harris	Batavia	Ellerslie of Fairfield 38065	Trotter
1809	J. E. Harris	Batavia	Verjus 13635 (22666P)	French Draft
1810	J. E. Harris	Batavia	Thumper 15014	French Draft
1843	John Larson	Fairfield	Fordy Spark 8446 (23320)	Shire
1994	J. F. Carlson	Lockridge	Monte Marshall 44104	Trotter
2025	John Larson	Fairfield	Admiral Togo II 8445 (22990)	Shire
2026	Julius Crile	Brighton	Champagne 41562 (52403)	Percheron
2243	J. E. Hoffman	Abingdon	Prince Archer 11397	Clydesdale
2427	C. W. Benn	Packwood	Packwood Boy 43791	Trotter
2428	C. W. Benn	Packwood	Wm. Packwood 43834	Trotter
2429	C. W. Benn	Packwood	Dr. Clark 44925	Trotter
2430	C. W. Benn	Packwood	Romulus 22674 (43371)	Percheron
2431	C. W. Benn	Packwood	Paul 40400 (45371)	Percheron
2432	C. W. Benn	Packwood	Skirbeck Squire 6830	Shire
2599	E. R. Smith	Fairfield	Parker 2379	Trotter
2504	J. W. Wilson	Fairfield	Sansonnet 12038 (44364)	French Draft
2505	J. W. Wilson	Fairfield	Octavian 6337 (18994)	Shire
2506	J. W. Wilson	Fairfield	J. W. B. 32333	Trotter
2507	Jerry Bates	Fairfield	Jerry May 41239	Trotter
2602	James M. Blakeley	Fairfield	Charles Byron 41480	Trotter
2603	James M. Blakeley	Fairfield	Charleston Jr. 22122	Trotter
2665	J. S. Herald	Fairfield	Latimer 10024	French Draft
2666	J. S. Herald	Fairfield	Matchless 9998	French Draft
2691	Humphrey Bros.	Pleasant Plain	Solide 41713 (46710) 15545	Percheron
2723	Maasdam & Wheeler	Fairfield	Keota Hymen 31887	Percheron
2988	Walton Bros.	Pleasant Plain	King of Perche II 2988	French Draft
2997	W. C. Estes & Co	Packwood	Vulcain 40705 (58882)	Percheron
3009	Nady Bros.	Fairfield	Pyrrhus II 42015	Percheron
3010	Nady Bros.	Fairfield	Lafayette 42014	Percheron
3028	Blogh Bros.	Fairfield	Coquin 14007 (54840)P	French Draft
3029	Blogh Bros.	Fairfield	Artiste 45792 (64460)	Percheron
3076	D. B. Hedge	Fairfield	King 13097	Clydesdale
3139	W. C. Estes & E. A. Heald	Packwood	Fiston De Libenne 2105 (Vol. 12, p. 434)	Belgian

JEFFERSON COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3138	W. C. Estes	Packwood	Oscanion 1532	Belgian
3011	A. D. Reed	Fairfield	Favorite 42011	Percheron
3226	J. L. McCleary	Libertyville	Dewey 15652	French Draft
3285	Jas. M. Blakeley	Fairfield	McLeod 10790	Clydesdale
3442	John Graber	Lockridge	Paupiet 50860 (62255)	Percheron
3636	E. R. Smith	Fairfield	Docile 19435	Percheron
3749	W. M. Goff	Batavia	Bienvenu 21265 (43224)	Percheron
4102	Allen Koons	Batavia	Forton II 2409 (37406)	Belgian
4103	Allen Koons	Batavia	Damocles 42360 (63821)	Percheron
674	J. H. Copeland	Fairfield	Portland 11901	Clydesdale
970	Henry Manhardt	Brighton	Merry Tom 6248	Shire
1842	Henry Manhardt	Brighton	Favorli 50644 (57174)	Percheron
3611	J. P. Campbell	Libertyville	Brownie the Kid 42129	Trotter
2878	C. D. McPherson	Fairfield	Jumbo 27767	Percheron
4354	Henry Rupp	Lockridge	King Tom XIV 9752 (24349)	Shire

JOHNSON COUNTY

505	G. H. Miller	Iowa City	Dewey 26113 (44243)	Percheron
504	G. H. Miller	Iowa City	Westwulf 6827	Shire
106	F. J. Cochran	Iowa City	Del Chimarch 34572	Trotter
180	Jno. Kelley	Oxford	Avignon 26078 (45016)	Percheron
312	R. E. Jones	Iowa City	Marius 9871 (9678)	Percheron
313	R. E. Jones	Iowa City	Queen's King 23685	Percheron
623	W. F. Lutz	Lone Tree	Conde 11204 16709 (34482)	French Draft Percheron
1090	G. L. Falk	Iowa City	Star Denmark (Falks) 2905	Saddle Horse
1314	Whittington & Ulch	Solon	Chieftain Harold 5702 (17251)	Shire
1346	C. E. Colony, Jr.	Iowa City	Joker 25007 (44963)	Percheron
1486	C. S. Lucas	Iowa City	Larry Ginter 31998	Trotter
1634	A. E. Barnes	Iowa City	Picador Jr. 11066	French Draft
1749	Brennan Bros	Solon	Canari 1422 (25262)	Belgian
1697	John Eden	Lone Tree	Brutus (243)	French Draft
1748	Brennan Bros	Solon	All Black 8293 (23886)	Shire
1720	Jas. Rodgers	Oxford	Phenix 19100	Percheron
2352	Scott Wilson	Iowa City	Lightfoot of Fairfield 36408	Trotter
2354	L. P. Kessler	Iowa City	Keota Superior 9328	Percheron
2355	L. P. Kessler	Iowa City	Victor K. 43665	Percheron
2356	L. P. Kessler	Iowa City	Coledge K. 43666	Percheron
2707	Lue Rohret	Oxford	Nig 33231	Percheron
2090	Lue Rohret	Oxford	Goodenough 34367	Percheron
2810	W. H. Bailey	Iowa City	Marshall Ney 14270	French Draft
1099	W. H. Bailey	Iowa City	Trojus Jr. 12654	French Draft
2915	Lutz & Co	Lone Tree	Chilli 46191 (58076)	Percheron
783	W. H. Bailey	Iowa City	Logan 13311 23717	French Draft
3100	L. W. Harding	Solon	Aegon Proctor 01031	Trotter
3108	Martin Berkey & Son	Iowa City	Bayard De Claquebois 944 (13900)	Belgian
3107	Martin Berkey & Son	Iowa City	Cahmporeau 32303 (43538)	Percheron
3113	Bert Bell	Iowa City	John the Fifth 0725	Trotter
3206	R. C. Zeller	North Liberty	Colonel 50042	Percheron
3122	The Belgian Horse Co. of Iowa City	Iowa City	Bijou De Bassine 1625 (24882)	Belgian
3207	R. C. Zeller	North Liberty	Comme Vous 46603 (63523)	Percheron
3479	A. Crawford	Lone Tree	Prince Everard 11169	Clydesdale
3480	A. Crawford	Lone Tree	Baron McMasters 11824	Clydesdale
3548	A. B. D. Wiebold	Oxford	Jovial 26085	Percheron
3564	Rhinehart & Wolfe	North Liberty	Meunier 12258 (51469)	French Draft
3632	Wm. Harney	Oxford	Victor 4714	Percheron
3670	Henry Morrow	Iowa City	Lemont 1805	Saddle Horse
3684	Geo. E. Hertz	Solon	Fairfax Chieftain 1817	Belgian
2576	D. J. Berkey & Son	Iowa City	Manea Loyal 6851 (20686)	Shire

JOHNSON COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3836	Wm. Harney	Oxford	Congo II 391	German Coach
3956	John Eden	Lone Tree	Comet VII 9588	Shire
1070	Frank Navy	Swisher	Cesar 23132 (45449)	Percheron
3134	W. H. Bailey	Iowa City	Teddy 15703	French Draft
4109	Geo. E. Hertz	Solon	Dandy Boy 15023	French Draft
3476	Floerchinger Bros	Oxford	Jim S. Patchen 43155	Trotter
4226	J. G. Sterrett	Iowa City	Camille 1539 (25460)	Belgian
4254	Jas. A. Clarke	Iowa City	Dan Hamilton 01061	Trotter

JONES COUNTY

12	P. H. Conner	Monticello	Al Platoe 38896	Trotter
950	Fred Heltz	Anamosa	Pictor Drayman 6073	Shire
990	G. H. Bohlken	Monticello	Prince of Quality 10840	Clydesdale
989	G. H. Bohlken	Monticello	Prince Royal 12304	Clydesdale
1043	P. L. Smith	Olin	Marcos B. 41312	Trotter
1154	Geo. B. Colton	Anamosa	Brilliant 32842	Percheron
1238	L. H. Chipman	Anamosa	Titus 1317 (25306)	Belgian
1566	A. J. Beem	Anamosa	Cosaque de Tilly (Vol. 11, p. 439)	Belgian
1585	C. A. Schwab	Oxford Junction	Romeo 11988	French Draft
1584	Onslow Shire Horse Co.	Wyoming	Black Dragon 5583	Shire
1784	G. W. Loehr	Anamosa	Dewey 9688	French Draft
1825	G. H. George	Monticello	Marcos Bozzaris 30856	Trotter
1824	G. H. George	Monticello	Substantial 8990	Clydesdale
2633	Monticello Percheron Horse Co.	Monticello	Escargot 23224 (43471)	Percheron
2554	Geo. Oltmans	Scotch Grove	George Junior 40424	Trotter
2840	S. E. Ireland	Anamosa	Ogle Swigert 20771	Trotter
2924	Jas. E. Kegley	Wyoming	Reveil 2083	French Coach
3298	C. E. Bottomstone	Wyoming	Young Roosevelt 11081	Clydesdale
3294	B. L. Hoyt	Scotch Grove	Tipster 35574	Trotter
3306	Larkey & Shimerda	Wyoming	Robert de Glatignes 2046 (19310)	Belgian
3305	Larkey & Shimerda	Wyoming	Jupin de Schoonenberg 2045 (32178)	Belgian
3459	G. H. Bohlken	Monticello	Barney's Best 11309	Clydesdale
3488	Sylvester Miller	Anamosa	Caesar 40845	Percheron
3524	Geo. Watt	Anamosa	Warrior 11723	Clydesdale
3566	John Tompkins	Wyoming	Bonnie Lad 10677	Clydesdale
3621	Henry Frutchey & Sons	Martelle	Gold Coin 954	Belgian
3658	Andrew Davidson	Monticello	Prince Charley 10786	Clydesdale
3680	U. J. Shanklin	Anamosa	Molina Pioneer 39913	Trotter
3180	E. E. Prosser	Anamosa	Prosit 2568	Belgian
2863	Folkers Bros.	Monticello	Prefet 2745 (36320)	Belgian
2634	Samuel Pfeil	Monticello	Royal Jap 11849	Clydesdale
4202	Frank Trasker	Wyoming	Bracconier 45237	Percheron
4422	Geo. Holub	Wyoming	Raveille 9078	Shire
4468	Geo. Ottmans	Scotch Grove	McCannon 9608	Clydesadle

KEOKUK COUNTY

620	O. O. Phelps & Geo. Sauer	Hedrick	Magnus of Montomore 7657	Shire
911	F. R. Feltz	Keota	Limoges 13661	French Draft
912	F. R. Feltz	Keota	Wilkie Wilson 35737	Trotter
1579	Wm. Cox	Kinross	Idleton 29618	Trotter
1448	A. L. McClenahan	What Cheer	Keota Chief 5427	Shire
1447	A. L. McClenahan	What Cheer	Gables Monarch 6958 (Vol. 25)	Shire
1449	A. L. McClenahan	What Cheer	Malaga 27852 (44386)	Percheron
1515	Chas. Santee	What Cheer	Capitain 193	German Coach
1590	J. C. Ulin	Delta	Tirelarigot 13039 (51124)	Percheron and French Draft

KEOKUK COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1591	J. C. Ulin	Delta	Postillon 13743 (53841)	French Draft and Percheron
1608	L. G. Garrett	What Cheer	Toreador 1608	Shire
1677	Keswick Draft Horse Co.	Keswick	Barnfields Lord 6932 (20226)	Percheron
1678	Delta Draft Horse Co. No. 2	Delta	Revolver 22648 (43596)	Percheron
1683	R. H. Schultz	Hedrick	Demon III 25795	Percheron
1729	Corban Utterback	Sigourney	Black Chief 21483	Percheron
1730	Corban Utterback	Sigourney	Sombrun 24283 (43610)	Percheron
1773	W. T. Fancher	South English	Keota Count 19469	Percheron
1772	W. T. Fancher	South English	Fred E. White 33368	Trotter
1775	Jno. Smith No. 1	Harper	Keota Victor 4639	Shire
1776	Jno. Smith No. 1	Harper	Buchman II 6596 (Vol. 24)	Shire
2108	J. F. Priest	Sigourney	Canonier 44747 (57041)	Percheron
718	A. Hall	Keswick	Nobby Allerton 31441	Trotter
2133	Keiser Bros.	Keota	Lawson 11919	Clydesdale
2344	F. M. Fixmer	Harper	Bellero 44304	Trotter
2345	F. M. Fixmer	Harper	Rabelais 22626 (43468)	Percheron
2346	F. M. Fixmer	Harper	Victor of Elm Park 11712	Clydesdale
1565	Dwight Beman & J. H. McNabb	Delta	Clifford 14287	French Draft
2351	J. E. Wolf & Sons	Hedrick	Major Hope 8413	Clydesdale
2398	R. H. Schultz	Hedrick	Ali 41511 (60307)	Percheron
2399	R. H. Schultz	Hedrick	Piedro 14631	French Draft
2486	A. L. McClenahan	What Cheer	Falcan 43495	Trotter
2495	M. P. Frazier	Richland	Danseur 46192 (59117)	Percheron
2496	M. P. Frazier	Richland	Ramoneur 44450 (52112)	Percheron
2510	J. T. Morton	Thornburg	Sangrador 12373 (51977)	French Draft
2614	J. A. Legg	Sigourney	Tom O'Rourke 13109	Clydesdale
2624	Dwight Beman & J. H. McNabb	Delta	Scott 12288	French Draft
2646	Martin Moland	Richland	Keota Mohland 44759	Percheron
2647	A. J. Ramsey	Richland	Keota Commodore 7989	Clydesdale
2448	Pierce Halferty	Keswick	Jupiter 8880	French Draft
2742	Victor Vercheval	Harper	Docteur 3968	French Coach
2741	Victor Vercheval	Harper	Mouton IV 1231 (21722)	Belgian
910	Victor Vercheval	Harper	Lisieux 13622	French Draft
2746	D. G. Clyde	South English	Hurbert 29024 14214	French Draft and Percheron
2747	D. G. Clyde	South English	Gabels Startling 7122 (Vol. 25)	Shire
2748	D. G. Clyde	South English	Keota Cummins 6191	Shire
2749	D. G. Clyde	South English	Garibaldi 15536 32304 (44600)	French Draft and Percheron
2814	Frank Snakenberg	Delta	Pattelin 25444 (45401)	Percheron
1764	J. F. Barton & W. W. Wilson	What Cheer	Charley Clifton 36819	Trotter
2916	W. A. Seaba	Sigourney	Rossignol 24273 (44330)	Percheron
2999	Samuel Singleton	Richland	Monet 13701 (42482)P	French Draft
3000	Samuel Singleton	Richland	Victor Noir 14506	Percheron
3021	Jno. Smith No. 1	Harper	Dunsby Menestrel 8869 (22304)	Shire
3103	Edward Blattner	Sigourney	Keota Corette 3103	Percheron
3167	W. R. McClune	Keswick	Bluecoat 9043 (18532)	Shire
3182	J. T. Morton	Thornburg	Aubepin 7019 (8383)	Percheron
3420	Singmaster & Sons	Keota	Northern Star II 8584 (22636)	Shire
3422	Singmaster & Sons	Keota	Keota Major 44758	Percheron
3423	Singmaster & Sons	Keota	Prudent 46149 (59079)	Percheron
3424	Singmaster & Sons	Keota	Trettoir 47068 (64018)	Percheron
3617	Singmaster & Sons	Keota	Keota Bostwick 35277	Percheron
3626	Emil Fixmer	Harper	Alert 15950	French Draft
3467	S. H. Kirkpatrick	Kinross	Aleska 9344 (10489)	Clydesdale
3856	L. G. Garrett	What Cheer	Esope 51682 (62538)	Percheron
3905	R. H. Shultz	Hedrick	Van Raalte 9347 (24840)	Shire
3982	Dexter Eller	Hedrick	Degourdi 42328 (67563)	Percheron
3981	Dexter Eller	Hedrick	Littleport Brown George 9348 (24844)	Shire
4003	Jas. A. Loughridge	Delta	Gaillard 2763	Belgian
4004	Jas. A. Loughridge	Delta	Montagnard 2762	Belgian

KEOKUK COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4006	C. H. Payton	Hedrick	Mason 16162	French Draft
585	J. A. Legg	Sigourney	Be Be Sarreguemine 10120	Clydesdale
1417	J. Galbraith & W. Campbell	Keswick	Prince Surprise 11054	Clydesdale
1797	Richmond Bros.	Sigourney	Vulcain d' Essche 2422 (29602)	Belgian
4114	Clayton Messenger	Keswick	Tobo Walnut 45754	Trotter
1997	A. L. McClannahan	What Cheer	Marquis de Bleret 2388 (35988)	Belgian
2688	Sam Keiser	South English	Negrillon II 15466	French Draft
2964	D. A. Patterson	Hedrick	Curet 41193	Percheron
4328	Victor Vercheval	Harper	Cheque 53353 (67637)	Percheron
916	Victor Vercheval	Harper	Alma Samson 5402 (16485)	Shire
4375	Thos. Singmaster	Keota	Upwood Combination 9240 (23623)	Shire
4376	Thos. Singmaster	Keota	Procurer 51886 (63131)	Percheron
4377	Thos Singmaster	Keota	Volontaire 51903 (64107)	Percheron

KOSSUTH COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
97	Hinderk Beenken	Germania	Romio 24088	Percheron
300	Frank Froehle	Bancroft	Corneillo (29508)	Belgian
91	James Britt	Algona	Wenona Tom 22562	Percheron
660	Burt Shire Horse Co.	Burt	Pride of the West 7285	Shire
741	M. B. Bratt & Mann & Powers	Burt	Bon Coeur 23073 (43207)	Percheron
782	James Pedley	Algona	Prince Climax 9807	Clydesdale
991	Ledyard Belgian Horse Co.	Ledyard	Charmeur De Dompire (20868)	Belgian
1304	E. H. Staley	Burt	Hugo Hercules 7477	Shire
1352	T. R. Hanifan	Swea City	Jongleur 948	French Coach
1393	H. P. Rasmussen	Galbraith	Le Roy 11262	French Draft
1471	Lone Rock Horse Breeding Ass'n	Lone Rock	Orleans (25132)	Belgian
1505	C. B. Albright	Algona	King George 5783	Shire
1548	H. G. Wright	Algona	Landsut 1047	French Coach
1726	Swea City Horse Co.	Swea City	Neron 22503 (42858)	Percheron
2102	Belgian Horse Breeder's Ass'n	Whittemore	Beau-Type 1360 (21624)	Belgian
2181	Sam'l Gross & Sons	Titonka	Usedom 8801	German Coach
2213	Akbar Stallion Co	St. Benedict	Akbar 22893 (43509)	Percheron
184	W. H. Strickler	Algona	Vic 31915	Trotter
809	Leonard M. Hart	Sexton	Judge Artus 30008	Trotter
2288	Sam'l Gross & Sons	Titonka	King Gerome 25543	Percheron
2657	Sandscale Victor Horse Co.	Bancroft	Sandscale Victor 5636 (17593)	Shire
2683	E. E. & W. R. Schweitert	Burt	Tom Patch 12439	Clydesdale
2462	Irvington Horse Co.	Irvington	Jeun Brin D'Or 1014 (15232)	Belgian
2710	Sparks Bros.	Algona	Sovereign 48089	Percheron
2727	Whitcomb Ball & Son	Titonka	Provost 5323	Shire
2795	H. A. Paine	Algona	Peter the Great 20321	Percheron
2802	Knutson & Nelson	Swea City	Bambin 18270	Percheron
2819	L. N. Larson	Algona	Major Woodford 42853	Trotter
1785	Albert Reutter	Lone Rock	Arabe 17974 (39208)	Percheron
3027	Hobart Horse Co.	Algona	Manor Society 6826 (19815)	Shire
3064	Geo. A. Stoke	Swea City	Souance 21282	Percheron
3079	A. W. Young	Burt	St. Laurent 10373	French Draft
3144	George Beard	Burt	Stanislas 22881 (43502)	Percheron
3393	C. G. Dourte	Swea City	Stuntney Upstart 1753 (10576)	Shire

KOSSUTH COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3646	James Pedley	Algona	King Robert 12247	Clydesdale
1190	J. M. Smith	Swea City	Joe Doe 7790	Clydesdale
4239	M. C. Mattern	Wesley	Vermouth 23056 (42620)	Percheron
1095	P. W. Reece	Ledyard	Keota Meireau 20212	Percheron
2664	M. C. Mattern	Wesley	Brock 1037 (Vol. 11)	Belgian
830	Jerry Helgens	Burt	General Grant 13332	French Draft
4306	T. F. McGovern	Whittemore	Vincenzo 53187	Percheron
4419	W. F. Mattern	Wesley	Justice M. 8815	Shire
4472	James Wallace	Fenton	Searchlight 11166	Clydesdale

LEE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
540	C. G. Cline	Fort Madison	Pilmore 35374	Trotter
539	C. G. Cline	Fort Madison	George Green 30700	Trotter
591	Sam'l Glendening	Mount Hamill	Wilton Prince 17745	Percheron
448	W. G. Willard	Fort Madison	Gladiator 43541	Percheron
1540	J. Klopfenstein	West Point	Bellair 31786	Percheron
2193	R. Klinger	Donnellson	Joyeux 25302 (43677)	Percheron
2180	R. Klinger	Donnellson	White Stripe 11496	French Draft
2347	Seth Cook	Mount Hamill	Prospect W. 39138	Trotter
2348	Seth Cook	Mount Hamill	Sirius 17550	Trotter
2945	W. E. Brown & Son	Fort Madison	Dedini 40425 (55357)	Percheron
2946	W. E. Brown & Son	Fort Madison	Riflard 41025 (54926)	Percheron
3309	Theodore Abel	Donnellson	Stuntney Kitchner 6930	Shire
3586	R. E. Hill	LaCrew	Count d'Orf 18402	Trotter
3587	R. E. Hill	LaCrew	Billy Dorf 43441	Trotter
3588	R. E. Hill	LaCrew	Lion 8885	French Draft
1445	R. R. Bullard	Weaver	Confrere 31108 (45920)	Percheron
3698	R. Klinger	Donnellson	Fearless Boy 12198	Clydesdale
1281	J. M. Newboy	Mount Hamill	Brown Wheeler 35519	Trotter
4020	Stephen Holtkamp	Overton	Halpine 45348	Percheron
4019	Stephen Holtcamp	Overton	Riant 48955 (62672)	Percheron
4139	Isidor Link	West Point	Carlo 35002	Percheron

LINN COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
512	W. J. Henderson	Central City	Mahomet King 7272	Shire
543	S. J. Hagerman & J. A. Abbott	Center Point	Keota Standard 27698	Percheron
512	W. J. Henderson	Central City	Brown William 5721 (17208)	Shire
480	P. C. Boyd	Toddville	Pouliard (24476)	Belgian
544	S. J. Hagerman & J. A. Abbott	Center Point	Dick Rogers 6398	Shire
450	R. L. Minor	Marion	Edison 5078	Shire
451	C. Fisher	Central City	Sulphume 31605	Trotter
446	A. Kinsey	Cedar Rapids	Blythe Ben 6843	Shire
430	David G. McLennan	Marion	Volontaire 27859 (45210)	Percheron
509	Troy Mills Percheron Horse Co.	Walker	Gambetta 22696 (42728)	Percheron
687	Jno. A. Dunn	Central City	Hercules 4166	Morgan
695	W. G. Coppock	Whittier	Colonel Russell 6490	Shire
711	Joe Kvetensky & Jno. Kaplan	Fairfax	Keota-Talbert 33452	Percheron
717	J. S. Kitterman	Center Point	John Hale 32933	Trotter
840	Frank Graver & J. A. Van Fossen	Lisbon	Gabels Thumper 5387 (17357)	Shire
830	Frank Graver & J. A. Van Fossen	Lisbon	St. Blaze 11642	French Draft
884	Walker Draft Horse Co.	Walker	Rameur 22900 (41803)	Percheron
1134	West Prairie Percheron Horse Co.	Central City	Sofferino 40147 (43776)	Percheron

LINN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1167	Dell Andrews	Central City	Great Scott 10347	Clydesdale
1254	Cedar Rapids Belgian Horse Co.	Palo	Pirate II 1272 (20620)	Belgian
1357	G. C. Murphy	Walker	Cupid 1357	Percheron
1467	Carl Moore	Central City	Tagus (25504)	Belgian
724	Hiland Horse Co.	Walker	Pantin 29907 (46885)	Percheron
1559	H. M. Shanklin	Waubeek	Huit 2038 (20290)	Belgian
1563	N. D. Harrold	Cedar Rapids	Jacqueminot 40602	Trotter
1674	Palo Draft Horse Co.	Palo	Negus 30580 (45360)	Percheron
1686	Bohemian Belgian Draft Horse Co.	Cedar Rapids	Don Carlos (14982)	Belgian
1705	Wolfe Bros. & Gamble	Mount Vernon	Elgin 27025	Percheron
1771	James Thompson	Bertram	Artemus 8593	Clydesdale
2083	W. L. DeClow	Cedar Rapids	Mirabeau 41037 (57698)	Percheron
2082	W. L. DeClow	Cedar Rapids	Botha II 2283 (Vol. 13, p. 327)	Belgian
2080	W. L. DeClow	Cedar Rapids	Ami de Givry 2281 (Vol. 13, p. 847)	Belgian
2079	W. L. DeClow	Cedar Rapids	Caesar de Sagelsem 2885 (Vol. 13, p. 624)	Belgian
2078	W. L. DeClow	Cedar Rapids	Garibaldi 2286 (Vol. 14, p. 347)	Belgian
2077	W. L. DeClow	Cedar Rapids	Hercule d'Oost 2287 (37386)	Belgian
2076	W. L. DeClow	Cedar Rapids	Minos 2290 (Vol. 13, p. 327)	Belgian
2075	W. L. DeClow	Cedar Rapids	Beinfait du Kat (Vol. 13, p. 330)	Belgian
2074	W. L. DeClow	Cedar Rapids	Christophe de Jeneffe 2293 (Vol. 13, p. 497)	Belgian
2073	W. L. DeClow	Cedar Rapids	Conquerant 2292 (37410)	Belgian
2072	W. L. DeClow	Cedar Rapids	Gustave 2294 (Vol. 13, p. 762)	Belgian
2071	W. L. DeClow	Cedar Rapids	Mirliton 2295 (Vol. 13, p. 902)	Belgian
2070	W. L. DeClow	Cedar Rapids	Jeannot de Beauvior 2288 (Vol. 14, p. 420)	Belgian
2069	W. L. DeClow	Cedar Rapids	Sapeur 2299 (Vol. 14, p. 347)	Belgian
2067	W. L. DeClow	Cedar Rapids	Monarque 2297 (37412)	Belgian
2065	W. L. DeClow	Cedar Rapids	Ardent 2280 (Vol. 13, p. 431)	Belgian
2064	W. L. DeClow	Cedar Rapids	Max de Zonne 2296 (37388)	Belgian
2063	W. L. DeClow	Cedar Rapids	Mouton Du Val 2289 (Vol. 13, p. 594)	Belgian
2061	W. L. DeClow	Cedar Rapids	Tambour De Hal 2223 (24238)	Belgian
2060	W. L. DeClow	Cedar Rapids	Pierrot Du Hazior 2225 (29304)	Belgian
2059	W. L. DeClow	Cedar Rapids	Coquelin 2222 (Vol. 12, p. 511)	Belgian
2058	W. L. DeClow	Cedar Rapids	Pedro 2224 (Vol. 12, p. 687)	Belgian
2057	W. L. DeClow	Cedar Rapids	Fanchon 41119	Percheron
2055	W. L. DeClow	Cedar Rapids	Volcan 41711 (64121)	Percheron
2054	W. L. DeClow	Cedar Rapids	Vanneau 41712 (64117)	Percheron
2053	W. L. DeClow	Cedar Rapids	Partout 41432 (60430)	Percheron
2052	W. L. DeClow	Cedar Rapids	Transvaalein 41431 (60718)	Percheron
2051	W. L. DeClow	Cedar Rapids	Tropique 41430 (62178)	Percheron
2050	W. L. DeClow	Cedar Rapids	Pomard 41429 (60647)	Percheron
2047	W. L. DeClow	Cedar Rapids	Robinson 41426 (58144)	Percheron
2046	W. L. DeClow	Cedar Rapids	Magnifique 41425 (61952)	Percheron
2043	W. L. DeClow	Cedar Rapids	Musele 41437 (63624)	Percheron
2041	W. L. DeClow	Cedar Rapids	Ginglard 41435 (65036)	Percheron
2040	W. L. DeClow	Cedar Rapids	Roland 41433 (62949)	Percheron
2039	W. L. DeClow	Cedar Rapids	Ardent 41434 (60651)	Percheron
2151	W. L. DeClow	Cedar Rapids	Gouverneur 2227 (26046)	Percheron

LINN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2199	E. H. Knickerbocker	Fairfax	Vital 2002 (37156)	Belgian
2201	E. H. Knickerbocker	Fairfax	Ecrassant 2591 (36070)	Belgian
2202	E. H. Knickerbocker	Fairfax	Louis de Terhaegen 2595 (35496)	Belgian
2203	E. H. Knickerbocker	Fairfax	Elmer de Lierde 2592 (Vol. 14, p. 809)	Belgian
2205	E. H. Knickerbocker	Fairfax	Titus 2600 (Vol. 13, p. 511)	Belgian
2206	E. H. Knickerbocker	Fairfax	Dilon de Silly 2590 (Vol. 13, p. 401)	Belgian
2208	E. H. Knickerbocker	Fairfax	Theo 2601 (Vol. 13, p. 512)	Belgian
2209	E. H. Knickerbocker	Fairfax	Brillant de Questenne 2584 (Vol. 13, p. 609)	Belgian
2607	J. I. Williams	Troy Mills	Bienvenu de Bougnies 2317 (Vol. 15)	Belgian
2678	J. F. Johnson	Cedar Rapids	Clericus 17939	Trotter
2706	Allen Bros.	Marion	Alesor 16399	Trotter
1164	V. Lacock	Springville	Fleury 15809 (32215)	Percheron
2785	W. L. DeClow	Cedar Rapids	Boron 2631 (32530)	Belgian
2794	Jno. W. Altmyer	Central City	Border Wilkes 29022	Trotter
2839	Jos. Simanek	Walker	District 45796 (64193)	Percheron
2961	W. W. Vaughn	Marion	Gendarme 43404	Percheron
2981	Lewis Payton	Walker	Japan 29333	Thoroughbred
3031	C. L. Jordan	Central City	Questionneur 2005	French Coach
3077	Jno. W. Altmyer	Central City	Chadwick C. 33798	Trotter
392	G. C. Murphy	Walker	Red Cloud M. 34335	Trotter
2056	W. L. DeClow	Cedar Rapids	Echo 41710 (63190)	Percheron
3293	Geo. K. Wenig	Cedar Rapids	Johnny G. 43444	Trotter
3375	John Fairley	Marion	Domino Noir 912 (11254)	Belgian
3415	Joe Baker Jr	Fairfax	Fairfax Augerau (48843)	Percheron
3458	J. W. Griffith	Cedar Rapids	Warboys Liberal 3367	Hackney
3527	E. W. Penly	Waubeek	Arnold Onward 34409	Trotter
436	W. A. Hutchinson	Central City	Quality 5190	Clydesdale
3889	E. H. Knickerbocker & Son	Fairfax	Pollux 3100 (38576)	Belgian
3888	E. H. Knickerbocker & Son	Fairfax	Colonel de Genly 3080 (38856)	Belgian
3887	E. H. Knickerbocker & Son	Fairfax	Pauliac 3099	Belgian
3896	E. H. Knickerbocker & Son	Fairfax	Marquis de Lierde 3096 (41946)	Belgian
3885	E. H. Knickerbocker & Son	Fairfax	Philippe d'Her 3098	Belgian
3884	E. H. Knickerbocker & Son	Fairfax	Baron de Wattines 3078	Belgian
3883	E. H. Knickerbocker & Son	Fairfax	Vado 3125 (24458)	Belgian
3882	E. H. Knickerbocker & Son	Fairfax	Sous-Off 42391 (65566)	Percheron
3881	E. H. Knickerbocker & Son	Fairfax	Franjous 42387 (65106)	Percheron
3880	E. H. Knickerbocker & Son	Fairfax	Briscard 42386 (67701)	Percheron
3879	E. H. Knickerbocker & Son	Fairfax	Troubadour 42392 (66731)	Percheron
3878	E. H. Knickerbocker & Son	Fairfax	Quo Vadis 42390 (65794)	Percheron
3877	E. H. Knickerbocker & Son	Fairfax	Galopin 42388 (65122)	Percheron
3960	B. F. Aslop	Sylvia	Bijou 3140 (18698)	Belgian
3979	Edwin Heaton	Fairfax	Grillon 42396 (67536)	Percheron
3980	Edwin Heaton	Fairfax	Bidel 42393 (68708)	Percheron
4009	A. M. Van Steenberge	Fairfax	Haurice 3093 (32694)	Belgian
4010	A. M. Van Steenberge	Fairfax	Houzard du Fosteau 3088 (29026)	Belgian
4011	A. M. Van Steenberge	Fairfax	Franconi de Sinnes 3087 (30470)	Belgian
4012	A. M. Van Steenberge	Fairfax	Bakau 3079 (40880)	Belgian
4013	A. M. Van Steenberge	Fairfax	Souvenir de Mullem 3102 (25900)	Belgian

LINN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1171	C. S. & F. C. Nichols	Walker	Pomard 1457 (25408)	Belgian
4162	A. M. Van Steenberge	Fairfax	Expres 3084 (Vol. 14, p. 613)	Belgian
4158	A. M. Van Steenberge	Fairfax	Elie 3083 (39116)	Belgian
4159	A. M. Van Steenberge	Fairfax	Supberbe de la Fontaine 3101 (Vol. 14, p. 411)	Belgian
4160	A. M. Van Steenberge	Fairfax	Armac de Lierde 3076 (Vol. 14, p. 809)	Belgian
4161	A. M. Van Steenberge	Fairfax	Marin 3094 (41584)	Belgian
4126	A. M. Van Steenberge	Fairfax	Milton Solt 3092 (41362)	Belgian
4124	A. M. Van Steenberge	Fairfax	Orange II de Vels 3097 (Vol. 14, p. 433)	
4125	A. M. Van Steenberge	Fairfax	Louis Bogaerden 3091 (34792)	
656	Geo. H. Cook	Troy Mills	Billy Dugan 44251	Percheron
4234	Lewis Heins	Cedar Rapids	Happy Jack 5189	Shetland Pony
4222	Harris & Atz	Marion	Calwell 42267	Trotter
3711	D. G. McLennan	Marion	Brave Tout 2809 (Vol. 15, p. 386)	Belgian
4221	A. M. Van Steenberge	Fairfax	Dragonde Solre 3081 (40170)	Belgian
4216	D. G. McLennan	Marion	Admiral 51758	Percheron
4235	Lewis Heins	Cedar Rapids	Brilliant IV 19648	Percheron
4271	P. Newcomb	Cedar Rapids	Aegon Boy 47674	Trotter
1732	Geo. M. Plumly	Springville	Hercules 32843	Percheron
1987	C. E. Tuttle	Cedar Rapids	Irgos 20033	Percheron
3133	Fred Leverett	Lisbon	George Arthur 15704	French Draft
4367	A. M. Van Steenberge	Fairfax	Leon de Zellick 3090 (41664)	Belgian
2786	J. H. Smith & Sons	Cedar Rapids	Eclaieur 15312	Belgian
1674	E. H. Knickerbocker	Fairfax	Negus 30580 (45360)	Percheron
4481	Edwin Bittle	Lisbon	Maple Lee 53963	Percheron
4469	F. E. Loverett	Lisbon	Boon 15263	French Draft
4464	F. E. Hann	Marion	Ora Pensas 47960	Trotter

LOUISA COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
13	S. C. Foster	Columbus Junct.	Dick Crockett 29751	Trotter
216	Johnston Bros.	Columbus Junct.	Chiloe 40861 (51387)	Percheron
217	Johnston Bros.	Columbus Junct.	Ribi 40857 (53279)	Percheron
524	David Sheriden	Oakville	Jongleur 24497 (44219)	Percheron
455	W. W. Wagner	Letts	Bataclan 21264 (43368)	Percheron
733	D. H. Westbrook	Letts	Fly On (28469)	Trotter
794	W. J. Henderson	Morning Sun	Conway Confidence II 1230	Belgian
977	C. V. Le Boutillier	Morning Sun	Taupin 10704	French Draft
978	C. V. Le Boutillier	Morning Sun	E. R. J. 27241	Trotter
979	J. T. Carithers	Morning Sun	Brilliant IV. 1598	Belgian
1025	Wapello Horse Co	Wapello	Elder Champion II 6595	Shire
1026	Columbus City Horse Co.	Columbus Junct.	Keota Enoch 12369	French Draft
795	W. J. Henderson	Morning Sun	Solim 8970	French Draft
1107	Nicholas Stamm	Letts	Bambin 16688 (34654)	Percheron
1195	L. F. McColm	Letts	Sir Lionel 10080 (10647)	Clydesdale
1777	W. W. Wagner	Letts	Lord Aesop 43058	Trotter
1796	Chas. Estle	Letts	Honni 24549 (44679)	Percheron
1791	D. E. Barrick	Morning Sun	Young Allerio 41025	Trotter
1984	W. W. Wagner	Letts	Ratanhia 7992 (38139)	Percheron
2183	Frank Okell	Morning Sun	Teddy R. 44856	Percheron
2184	J. G. Stafford	Morning Sun	Keota Illuminator 31889	Percheron
2185	J. G. Stafford & Frank Okell	Morning Sun	Coco 45491 (52333)	Percheron
2349	Herman Vollmer	Wapello	Silver Tom 28876	Percheron
2394	Jno. W. Jarvis	Morning Sun	Dori de Leex 2177 (31158)	Belgian

LOUISA COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3528	Concord Horse Co	Columbus Junct.	Nectar 47088 (58404)	Percheron
2110	T. W. Hendrickson & Griffith Davis	Columbus Junct.	Earl L. 44479	Trotter
3589	Nicholas Stamm	Letts	Plumet 48451	Percheron
3748	Chester Prindle	Oakville	Erma 48627	Percheron
3751	W. J. Henderson	Morning Sun	Deeping Buscot 9200 (24795)	Shire
3752	W. J. Henderson	Morning Sun	Martin de Connin 2429 (31316)	Belgian
1329	Lyman Ogier	Morning Sun	Sebastopol 50220 (58286)	Percheron
4142	Chester Prindle	Oakville	Stick 52479 (66004)	Percheron
4266	J. G. Stafford	Morning Sun	Romer 47708	Percheron
4332	James H. Letts	Letts	Atora 32046	Trotter
4484	Henrickson & Davis	Columbus Junct.	Intrepid 830	French Coach

LUCAS COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
227	G. W. Dillman	Derby	Rosco 9705	French Draft
332	E. F. Brown	Russell	Black Foxy 4636	Morgan
81	E. F. Brown	Russell	Onus Black Hawk 5001	Morgan
80	E. F. Brown	Russell	Morgan King 4817	Morgan
600	James Brown	Chariton	Pipelet 27113 (43904)	Percheron
599	Chas. R. Kirk	Chariton	Nisus 31745 (45921)	Percheron
597	Chas. R. Kirk	Chariton	Hargrave Tom 7597	Shire
732	Kinmouth Bros.	Russell	Stuntney Napoleon 8367 (22826)	Shire
734	W. H. Householder	Chariton	Walter Dewey 31721	Trotter
886	David Q. Storie	Chariton	Norwil Jr. 36043	Trotter
885	David Q. Storie	Chariton	Sam Swift 26575	Trotter
1101	H. D. Vawter	Chariton	Attractive Lad 10611	Clydesdale
1387	Daniel T. Tice	Russell	Tanner 11453	French Draft
1388	Daniel T. Tice	Russell	Bertrand 40116	Percheron
1429	W. W. Clore	Lucas	Conway Banker 6150	Shire
1430	W. W. Clore	Lucas	Tom Seevers 42154	Percheron
887	David Q. Storie	Chariton	Saunemin 23473	Percheron
1740	W. E. Johnson	Russell	Colin 28433 (48416)	Percheron
1742	N. M. Pierce	Russell	Admiral 40657	Percheron
1743	N. M. Pierce	Russell	Cormenon 16399 (24126)	Percheron
2160	Chas. R. Kirk	Chariton	Rivoli 41420 (62516)	Percheron
2159	Chas. R. Kirk	Chariton	Hugo 41410 (60247)	Percheron
2157	Chas. R. Kirk	Chariton	Vernoy 41413 (61891)	Percheron
2156	Chas. R. Kirk	Chariton	Castin 41416 (57619)	Percheron
2178	E. F. Brown	Russell	Onus Foxy 5000	Morgan
2177	E. F. Brown	Russell	Star Foxy 5163	Morgan
2176	E. F. Brown	Russell	Black Hawk Eclipse 5000	Morgan
2175	E. F. Brown	Russell	Foxy Eclipse 5011	Morgan
2174	E. F. Brown	Russell	Tony Foxy 5013	Morgan
2173	E. F. Brown	Russell	Black Diamond 5162	Morgan
2272	I. G. Chapman	Derby	Cherry's Prince 10453	Clydesdale
2273	I. G. Chapman	Derby	Prince Gallant 6121	Clydesdale
2274	I. G. Chapman	Derby	Hyperion 15798	Percheron
335	J. S. Batten	Russell	Creston Saul 6231	Shire
2350	Greenville Horse Co.	Russell	Operateur 24456 (44537)	Percheron
2363	J. F. Spiker	Chariton	James 11600	French Draft
2699	H. M. Spiker	Belinda	Red Rambler 42523	Trotter
2700	H. M. Spiker	Belinda	Les Authieux 10688	French Draft
2803	J. F. Spiker	Chariton	Refuge 5602	Clydesdale
2851	C. E. Foster	Chariton	Cherif 8711 (14626)	Percheron
2986	R. T. Huston	Russell	Agressive 0872	Trotter
2987	R. T. Huston	Russell	Stuntney Salathiel 6741 (Vol. 24)	Shire
2936	J. E. Ross & J. W. Kent	Lucas	Don-Pedro 41038	Percheron
3296	R. O. Miller	Lucas	Mont 47722	Percheron
3361	Wm. Bingaman	Belinda	Falls 31750 (45845)	Percheron
3450	D. Q. Storie	Chariton	The Lord Mayor 2172 (8417)	Shire
3449	D. Q. Storie	Chariton	Duke of Lanark 9195 (10732)	Clydesdale
3447	Daniel T. R. Tice	Russell	Jumbo 15896	Percheron

LUCAS COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3584	A. J. Noble	Chariton	Victor 41275	Percheron
1682	Hessing & Trautman	Derby	Geant Jr. 25431	Percheron
3968	Chas. R. Kirk	Chariton	Togo VII 9288 (24802)	Shire
3969	Chas. R. Kirk	Chariton	Lanes Marmion 9287 (24836)	Shire
3970	Chas. R. Kirk	Chariton	Batailleur 42285 (62357)	Percheron
3971	Chas. R. Kirk	Chariton	Beau Poil 42294 (66449)	Percheron
3972	Chas. R. Kirk	Chariton	Etourneau 42287 (67264)	Percheron
3973	Chas. R. Kirk	Chariton	Ventose 42285 (65838)	Percheron
3974	Chas. R. Kirk	Chariton	Aigrin 42296 (64638)	Percheron
3975	Chas. R. Kirk	Chariton	Blaireau 42290 (59417)	Percheron
3976	Chas. R. Kirk	Chariton	Ventriloque 42283 (58828)	Percheron
3977	Chas. R. Kirk	Chariton	Ciboulot 2288 (66571)	Percheron
3978	Chas. R. Kirk	Chariton	Don Quichotte 2291 (58088)	Percheron
688	C. N. & D. O. Hawkins	Chariton	General Grant 47478 12319	Percheron and French Draft
4105	R. O. Miller & L. Puderbaugh	Lacona	Kimberley 13176	Clydesdale
4106	R. O. Miller & L. Puderbaugh	Lacona	Storm King 49331	Percheron
4244	Harmony Horse Co.	Chariton	Togo 43712	Percheron
4248	Daniel T. Tice	Russell	Vaughn 16854	French Draft
3848	E. F. Brown	Derby	Soham Prince 9300 (23714)	Shire

LYON COUNTY

249	James Kemplay	Rock Rapids	Chambrey 23350	Percheron
73	John Morgan	Rock Rapids	Verndale 35982	Trotter
39	Christopher Herbert	Rock Rapids	Bramble 10721	French Draft
403	Hartenhoff, Wenzel & Zorning	Lester	Nelson 40040	Percheron
2234	H. J. & Harm Meester	Ellsworth, Minn	Lustre 45030	Percheron
2400	Willie Peters	George	Chrastos (63102)	German Coach
2483	G. S. Pohlman	Doon	Colonel 41539	Percheron
2492	Christopher Herbert	Rock Rapids	Invincible 15391	French Draft
2685	Fred Essman	Ellsworth, Minn	Black Rock 44679	Percheron
2824	Henry Nolte & Sons	Ellsworth, Minn	King 24302	Percheron
2934	Henry Moen	Inwood	Adalgo 2521 (37454)	Belgian
3072	Louie Getting	Little Rock	Marabout 44828 (58431)	Percheron
3084	Frank Roth	George	Gironde 40341	Percheron
3090	O. J. Feay	Larchwood	Matchless 17224	Percheron
3116	Geo. Rosenberg	Ellsworth, Minn	Armand 24419 (42785)	Percheron
3169	M. D. Shutt	Rock Rapids	Marshall 33389	Percheron
3170	M. D. Shutt	Rock Rapids	Dave 47396	Percheron
3220	Henry Kroeger	Alvord	Sans Souci 13699 (50189)P	French Draft
3320	H. T. Gulk	Larchwood	Volger 50140 (52596)	Percheron
3657	Wm. Parry	Rushmore, Minn	Mounton de Marchove (18122)	Belgian
4438	G. W. Patterson & Frank Roth	George	Orso 44076	Percheron

MADISON COUNTY

170	A. D. Guy	Winterset	Gov. Cummins 13037	French Draft
102	Jno. Riser & Sons	Earlham	Brilliant De Neusvilles 911 (13018)	Belgian
224	Smith Bros.	Earlham	Va-De-Bon-Coeur 12312 (5191)	French Draft
225	W. G. Mitchell	Winterset	Alexander the Great 23294	Percheron
295	J. L. Waltman	Macksburg	Creston Mack 10051	French Draft
300	Jackson Township Horse Co.	Winterset	Royal Lad 7749	Shire

MADISON COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
553	W. A. Forbes	Winterset	Benefactor F. 7847	Shire
463	Earlham Hackney Horse Co.	Earlham	Brunel 626	Hackney
72	St. Charles Percheron Horse Co.	St. Charles	Taupin 28142 (44779)	Percheron
609	Jos. Russell	Winterset	Thumper XXII 6369	Shire
596	Peru French Coach Horse Co	Peru	Universe 2857	French Coach
595	Van Meter Horse Co.	Winterset	Patissier 27392 (45693)	Percheron
410	W. S. Hildebrand	Winterset	Creston Boy 6914	Shire
422	The Ored Percheron Horse Co.	Winterset	Phoebus 34106 (45092)	Percheron
765	Loren Dunbar	Earlham	Reynard 19903	Percheron
772	C. M. Haxton	Earlham	Ony-West 32697	Percheron
868	Schouboe Bros.	Earlham	Numa 3037 (2014)	German Coach
817	St. Charles & Wick Shire Horse Co.	St. Charles	Warmington Brave Prince 6989 (19220)	Shire
882	Thomas Kirkland	Macksburg	Sporting Boy 41163	Trotter
881	Macksburg Draft Horse Co.	Macksburg	Cadix 27450 (48503)	Percheron
1124	Geo. Z. Smith	Macksburg	Rampton Baron 7586 (21781)	Shire
1593	W. D. Bradshaw	Truro	Meti 33976 (53392)	Percheron
2290	Ord Percheron Horse Co.	Winterset	Grisou 41221 (58517)	Percheron
2580	Robert Neal	Winterset	Porto 2138 (Vol. 12, p. 511)	Belgian
2894	J. D. Ross & J. M. Young	Winterset	Perry Mac 28266	Trotter
2805	Deer Creek Horse Co.	East Peru	Prince Napoleon 50985	Percheron
1725	C. O. Clements	Earlham	Fanfaron 27393	Percheron
3208	Madison County Horse Co.	Winterset	Sansonnet 45764 (54418)	Percheron
3209	C. P. Abbott	Macksburg	Tommy Dunton 45213	Trotter
3341	Union Township Horse Co.	Winterset	Vibrant 40108 (47485)	Percheron
3593	Loren Dunbar	Earlham	Vidoc 45543	Percheron
3594	Loren Dunbar	Earlham	Rocher 47770 (55307)	Percheron
3595	Loren Dunbar	Earlham	Black Diamond 45544	Percheron
3596	Loren Dunbar	Earlham	Turc 41093	Percheron
4057	T. J. Hudson	Winterset	Black Morgan Prince 5058	Morgan
4371	J. H. Shultz	Winterset	McKinley 14679	French Draft
4381	Ward McDaniel	Winterset	Brown Woodford 31813	Trotter
4407	F. W. Workey	Winterset	Wood 47851	Trotter
4487	F. M. McDaniel	Winterset	Red Woodford 37660	Trotter
4488	F. M. McDaniel	Winterset	Colonel P. 12307	Trotter

MAHASKA COUNTY

379	R. E. Porter	New Sharon	Sharon King 37310	Trotter
471	C. G. Tice	Taintor	Robert Cecil 9997	Clydesdale
498	Jno. W. Irwin	New Sharon	High Points 22292	Trotter
460	W. A. Sexsmith & J. M. Drennon	New Sharon	Ravaillac 27809 (47054)	Percheron
716	J. R. Moore	Barnes City	Transvalien (21634)	Belgian
461	New Sharon Shire & Hackney Horse Co.	New Sharon	Childwall Chorister 7550 (20348)	Shire
462	New Sharon Shire & Hackney Horse Co.	New Sharon	Heacham Hereward 693	Hackney
1284	A. L. Fox	New Sharon	Major Lacy 28768	Percheron
1328	E. E. Dalbey	Barnes	Isard 498	French Coach
1360	I. M. Reed	Rose Hill	Jno. Addison 10642	French Draft
1361	I. M. Reed	Rose Hill	Bedworth Boy 36968	Trotter
1362	J. N. Moore	Rose Hill	Perplexe (54841)	Percheron
1363	Thos. Seevers	Oskaloosa	Senator 33365	Percheron
1502	J. H. Barnes	Oskaloosa	Blackstone II 14551	French Draft

MAHASKA COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1542	L. Van Buskirk	Fremont	Aurungzebe 13069	French Draft
1569	J. H. Barnes	Oskaloosa	Bland 45148	Percheron
1571	J. H. Barnes	Oskaloosa	Lord Thomas 12784	French Draft
1681	Michael Denney	Rose Hill	Torcy 15152	Percheron
1704	J. C. Jarard	Taintor	Hobson 8894	Clydesdale
1710	A. S. Jarard	New Sharon	Robbie Burns 11317	Clydesdale
1153	Maleby & Walden	Rose Hill	Sharon's Wonder 8673	Clydesdale
1760	R. H. & J. H. Barnes	Olivet	Bon Joan 11467	French Draft
1804	R. Rodman	Oskaloosa	Triboullet 16757 (30543)	Percheron
1803	R. Rodman	Oskaloosa	Remus 11466	French Draft
2009	R. H. & J. H. Barnes	Oskaloosa	D'Orsay 15181	French Draft
2010	R. H. & J. H. Barnes	Oskaloosa	Black Beauty 15185	French Draft
2011	R. H. & J. H. Barnes	Oskaloosa	Buster 15186	French Draft
2012	J. H. Barnes	Oskaloosa	Blackstone 15148	French Draft
2014	J. H. Barnes	Oskaloosa	Admiral 46555	Percheron
2015	J. H. Barnes	Oskaloosa	Triboullet 46557	Percheron
2016	J. H. Barnes	Oskaloosa	Coco 46561	Percheron
2017	J. H. Barnes	Oskaloosa	Bosler 46556	Percheron
2019	J. H. Barnes	Oskaloosa	Parfait 46560	Percheron
2020	J. H. Barnes	Oskaloosa	Lacy 46563	Percheron
2022	Arie Kool	Leighton	Ferndale 11685	Clydesdale
2023	Arie Kool	Leighton	Taupier 43736 (61059)	Percheron
2113	Steele & Brubaker	Cedar	Sauveur 27825 (48282)	Percheron
2114	Steele & Brubaker	Cedar	Vasistas 44472 (59403)	Percheron
2245	M. H. Davidson	Oskaloosa	Captain Reaper 43483	Trotter
1287	W. C. Hite	Lacey	September 11613	Clydesdale
2315	Alex Soults	Barnes City	Barville III 9823 (13033)	Percheron
2477	R. W. Hoit	Beacon	Powerful 47596	Percheron
2608	J. F. Sheley	New Sharon	Keota Cheri 18864	Percheron
2642	J. C. Redman	Leighton	Robert 44358	Percheron
2643	J. C. Redman	Leighton	Sherlock 42139	Percheron
2644	J. C. Redman	Leighton	Diplomat 15343	French Draft
2645	J. C. Redman	Leighton	Paul 15341	French Draft
2759	H. W. Lundt	Taintor	Cheri II 10438	French Draft
2760	H. W. Lundt	Taintor	Vesuve 10931 (934)N	French Draft
3015	Heisel & Burrier	Fremont	Billington 8483 (20249)	Shire
3099	Star Horse Co.	Fremont	Richland 47441	Percheron
3127	Reed & Moore	Rose Hill	Medine 46182 (60405)	Percheron
3150	J. I. Molyneaux	Barnes City	Blackbrooke Verona 8606 (20259)	Shire
3132	J. C. Redman	Leighton	Joe 15706	French Draft
3344	Heisel & Burrier	Fremont	Remus 11466	French Draft
3392	Heisel & Burrier	Fremont	Rescue 7516	Shire
3486	Jay Roof	Cedar	Bedford 11827	French Draft
3555	C. W. Fellers	Fremont	Fremont Favorite 45314	Percheron
2873	H. E. Motto	Oskaloosa	Shade Barron 40648	Trotter
1335	Jesse Ross	Fremont	Montevillers II 9503	French Draft
3987	J. E. Hull	Taintor	King Lofty 45988	Percheron
3988	J. E. Hull	Taintor	Lofty 23904	Percheron
3989	J. E. Hull	Taintor	Pike Timber Chief 11664 (2813)	Clydesdale
3990	J. E. Hull	Taintor	Kilted Lad IV 12554	Clydesdale
3991	J. E. Hull	Taintor	Great Scott 145	Suffolk

MARION COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
602	F. M. Ridgeway	Swan	Emerald 12135	French Draft
601	F. M. Ridgeway	Swan	Pride 14422	French Draft
727	L. Maasdam & Son	Pella	Nova 49735	Trotter
740	W. W. Rankin	Knoxville	Legal Tender 6322	Shire
764	John H. Cowman	Percy	Santiago 13030	French Draft
473	Pella Horse Co.	Pella	Aride 25056 (45434)	Percheron
777	L. Maasdam	Pella	Volage 55179	Percheron
819	Walter Whitlatch	Columbia	Bootle Champion 3963 (10991)	Shire
821	Lee Wilson	Columbia	Black Sam 40065	Percheron

MARION COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
909	Henry Bickford	Columbia	Stuntney Lubin 6731	Shire
908	Henry Bickford	Columbia	Rex of La Moille 32067	Percheron
1015	Johannes Stravers	Pella	Charlot (55213)	Percheron
1354	Van Derwaal & Van Zante	Pella	Jules 1354	Belgian
1237	Marysville Horse Co.	Knoxville	Lord Fordy 6909 (Vol. 24)	Shire
1522	Oscar Buxton	Knoxville	Cyclone 15655 (24031)	Percheron
1586	L. V. Colwell	Columbia	Admiral B. 22850	Percheron
1807	J. B. Elliott	Knoxville	Baron De Jay 41467	Trotter
1864	Seth Way	Knoxville	Emmet H. 31170	Trotter
2021	W. M. Black	Knoxville	Dieppe 15067	French Draft
1655	W. H. Maasdam	Pella	Expert 5882	Trotter
2211	Hartley & Wilson	Columbia	Lamy 46057 (56473)	Percheron
2581	H. H. Conrey	Knoxville	Bristol Lange 1441 (25360)	Belgian
2876	C. L. Hardman	Knoxville	Roitlet 25037 (44653)	Percheron
866	P. Jackson & Sons	Pella	Rose Lad 11316	Clydesdale
3019	Harvey James	Knoxville	Rampart 6775 (19963)	Shire
3058	D. C. Belknap	Knoxville	Charles Walton 44918	Trotter
820	Bellamy & Hanna	Harvey	Fred Willes 38017	Trotter
3126	J. M. Maddy	Knoxville	Stuntney Fearnaught 5347	Shire
3159	Lewis Dunham	Knoxville	Keota Warsaw 20693	Percheron
3201	Isaac Hodgson	Pleasantville	Vigoureaux (55019)	Percheron
3213	Wm. Visser	Knoxville	Man-Well 33885	Percheron
3223	Mike Slykhuis, Jno. DeBok and Matthew Karl	Percy	Scarcliffe Powerful (19110)	Shire
3333	Wm. J. Way	Dallas	Keota Seductor 18225	Percheron
3304	Levi W. Caulkins	Bussey	Treko G. 45269	Trotter
3332	Bussey Horse Co.	Bussey	Armand 25587 (42962)	Percheron
3360	J. D. Cunningham	Knoxville	Kentucky Jay 38687	Trotter
3359	J. D. Cunningham	Knoxville	Directum Boy 31294	Trotter
3349	Neifert & Gillion	Attica	Paragon 24940	Percheron
3319	A. K. Hart	Pleasantville	George B. 45537	Percheron
3426	C. R. & J. A. Hughes	Percy	Billy Rex 45388	Trotter
3451	R. Core	Pleasantville	Penrose 8803	Clydesdale
3506	Osa Butcher	Pleasantville	Vermast 10866	French Draft
3543	John W. Bruere	Tracy	Sir Consul 9661	Trotter
3550	C. F. Blackman	Knoxville	Biceps 9023 (13577)	Percheron
3664	R. C. Converse	Harvey	Reve d' Or Wanegem 2723 (29490)	Belgian
3667	J. Van Niewenheinzen & Co.	Pella	Corbett 6493	Shire
3847	D. D. Marsh	Pleasantville	Montmirail 28442 (45040)	Percheron
3850	D. C. Belknap	Knoxville	Parapet 15872	Trotter
3849	A. Kool	Otley	Black Ben 44724	Percheron
2280	DeGeus Bros.	Pella	Keota Jabez 44756	Percheron
4074	Hanna & Bellamy	Knoxville	Willie Riley 38311	Trotter
4150	C. L. Hardman	Knoxville	Bon Carlsbad 5417 (17184)	Shire
4146	T. D. Tice	Pella	Iowa Pride 01015	Trotter
4145	T. D. Tice	Pella	Reciprocity 10266	Clydesdale
4129	Lee Wilson	Columbia	Gold Magnet 44050	Trotter
4128	Hartley & Wilson	Columbia	Pavilion de Noirhat 3041 (Vol. 14, p. 377)	Belgian
4233	L. M. Hardin	Pleasantville	Agenda 10856 (44896)	French Draft
4232	L. M. Hardin	Pleasantville	Finch's Buster Brown 8429	Shire
4191	Jacob Van der Pol	Pella	Luxemburg 51213 (62264)	Percheron
4283	Hanna & Bellamy	Knoxville	Erskine Warrior 10610	Clydesdale
1587	J. E. Verploeg	Pella	Searchlight 6396 (19115)	Shire

MARSHALL COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
538	F. C. Knight	Laurel	Brooklyn 6487	Shire
370	Edw. Blackburn	Laurel	Major B. 11141	Clydesdale
342	J. S. Paul	Laurel	Sans-Peur 34016 (51102)	Percheron

MARSHALL COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
367	Wm. Schultz	Laurel	McHanna 54531	Trotter
369	Edw. Blackburn	Laurel	Prince Henry 10990	Clydesdale
191	C. A. Rolston	Liscomb	Jupiter 30599 (46712)	Percheron
183	Jno. Brown	Marshallown	Major Marion 9584	Clydesdale
316	Henry Hilleman, Sr.	State Center	Newton Duke 7014	Shire
490	W. E. Elliott	Clemons	Red Gregory 41805	Trotter
691	LeGrand Percheron Horse Co.	Le Grand	Petrus 27054 (43878)	Percheron
406	W. B. Elliott	Marshalltown	Wayne Boy 30242	Trotter
752	Wm. Paul	Laurel	Wesley V. 13540	French Draft
751	Wm. Paul	Laurel	Keota Romer 19485	Percheron
856	Louis Eckhardt	State Center	Laubet 10589	French Draft
1270	C. W. Bergman	Laurel	Keota Lord 7588	Shire
1351	Chas. Greatreaks	Marshalltown	John Adrain 0311	Trotter
1506	J. A. Ward	Gilman	Glenwood Dewey 3429	Shetland Pony
1507	J. A. Ward	Gilman	Mac Claskie Jr. 9470	Clydesdale
1508	J. A. Ward	Gilman	Tunis 11095	French Draft
1536	B. F. & C. A. Robinson	Marshalltown	Junot 35620 (53132)	Percheron
1512	J. W. Crammer	Liscomb	Sebastian 257 (4)	Belgian
1814	D. C. Bligh	Laurel	Water Boy 34784	Trotter
1818	Jacob Waltemeyer	Marshalltown	Forban 813 (9770)	Belgian
2638	Bear Grove Draft Horse Co.	State Center	Cavaignac 27832 (44517)	Percheron
2639	W. A. Taggart	State Center	Lipton 9265	Clydesdale
2670	H. L. Hartwig	State Center	Wenona Forester 4765	Shire
2745	Dannen Bros.	Marshalltown	Blockey Prince 19368	Percheron
2049	C. B. Dannen & Sons	Melbourne	Ernest 41428 (64967)	Percheron
2768	B. L. Pyle	Marshalltown	Duchesne 25440 (42847)	Percheron
2848	E. G. Miller	Melbourne	Riffain 25149 (43641)	Percheron
2913	Henry D. Neidert	State Center	Rob Edwards 12394	Trotter
3230	Sherman Wolfgong	Marshalltown	Mongaillard 41232 (53040)	Percheron
3231	Sherman Wolfgong	Marshalltown	Brulot 41233 (52580)	Percheron
2553	Sherman Wolfgong	Marshalltown	Joubert de Silly 2627 (21952)	Belgian
3243	E. E. Carver	Marshalltown	Prince Araneta 43474	Trotter
3441	D. S. Forrey	Marshalltown	Fay K. 47551	Percheron
3473	Lewis Bros.	Marshalltown	Beau Cheval 15846	French Draft
3485	Joe Bunn	St. Anthony	Loubert 32075	Percheron
3507	Grant Kuhns	Laurel	Manly 43098	Trotter
3577	Melbourne Percheron Horse Co.	Rhodes	Scarabe 28455 (46896)	Percheron
3688	E. W. Mahn	State Center	T. J. Girton 32093	Trotter
4364	Fred S. Neier	Haverhill	Debonair 42528	Percheron
4442	Chas. Hulin	Gilman	Captain 13733	Clydesdale

MILLS COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
542	Phillip Hambsch	Malvern	Arrondi 26131 (44741)	Percheron
176	C. H. Peer	Strahan	Lord Gregory 42903	Trotter
175	C. H. Peer	Strahan	Brown Eagle 32794	Trotter
174	C. H. Peer	Strahan	Harry Mount 7024	Trotter
647	W. E. Wickersham	Glenwood	Barthelmy 1156 (21580)	Belgian
646	W. E. Wickersham	Glenwood	Alpago (1368)	Oldenburg Coach
419	A. S. Edwards	Glenwood	King Mills 35951	Trotter
703	A. M. Miller	Glenwood	Hinxton Jumbo 6391 (10688)	Shire
708	C. L. Miller	Glenwood	Belkader (22968)	Percheron
758	Geo. A. Coiner	Malvern	Insurgent 7728	Shire
822	C. T. Boles	Malvern	Jessie 23830	Percheron
1130	Wales Shire Horse Co.	Emerson	Harshfield Warrior 7019	Shire
1196	Percheron Horse Co.	Glenwood	Luther 29507 (47005)	Percheron
1381	Albert Pullman	Silver City	Kiaser 26004	Percheron
1370	C. E. Ballain	Emerson	Jean Bart 12732	Percheron

MILLS COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1463	J. L. Douglas	Henderson	Keota Spy 18226	Percheron
1464	J. L. Douglas	Henderson	Dalzel 25634	Percheron
1668	D. M. Culver	Hastings	Sophocles (7479) 5995	Percheron
1150	W. J. Roberts	Henderson	Driftway 31612	Trotter
1823	J. R. Maynes	Henderson	Nailstone Sidar 7987 (22612)	Shire
2281	S. S. & R. B. Summers	Malvern	Robert Burns 5632	Shire
2995	Geo. Schurr	Strahan	Monone 41547 (62758)	Percheron
2996	Geo. Schurr	Strahan	Flag of Truce 8823 (22364)	Shire
3033	C. M. Follett	Malvern	Nailstone Luke 8826 (24783)	Shire
3034	L. C. Stevenson & W. H. Salyers	Malvern	Coco 44305 (58097)	Percheron
1266	Hans Neilsen	Emerson	Top Sawyer 3d 7506	Shire
4210	J. R. Maynes	Henderson	Coureur 41816 (64733)	Percheron
4211	J. R. Maynes	Henderson	Nailstone Baskerville 9176 (24469)	Shire
319	Geo. Lloyd	Glenwood	H. D. 40324	Trotter
1550	Geo. Lloyd	Glenwood	Stuntney King Edward 8414	Shire

MITCHELL COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
400	W. D. Runge	Osage	Emoi 27436 (43650)	Percheron
137	S. T. Doyle	Riceville	Valliant 41035 (58028)	Percheron
136	S. T. Doyle	Riceville	Estevan 40356 (51744)	Percheron
152	Stacyville Percheron Horse Co	Stacyville	Solim 24740 (43671)	Percheron
145	C. B. Jacobs	Osage	Charming Tarbreoch	French Draft
214	H. W. Clay	Osage	Bayard de Tooz (29730)	Belgian
212	A. I. Stacy	Stacyvillle	Star 29780	Percheron
230	E. J. Howe	Osage	Stuntney Barak 6730	Shire
559	Richard Jordan	McIntire	Gilbert 33622	Percheron
558	Richard Jordan	McIntire	Woodbury Herod 4554	Morgan
560	Richard Jordan	McIntire	Bill Morrison 19327	Percheron
645	Mitchell Belgian Horse Ass'n	Osage	Lingot (18150)	Belgian
666	Riceville French Draft Horse Co	Riceville	Tigre 11275	French Draft
665	J. C. Kathan & Son	Osage	Ned K. 43983	Trotter
789	J. C. Ashmore	Osage	Nateby Tom 3509 (10036)	Shire
883	Fred Stark	Riceville	Bataille (19951)	Percheron
1174	O. V. Perry	Riceville	Heir of Fame 10639 (11607)	Clydesdale
1398	C. H. Duenow	St. Ansgar	Stuntney Dante 7059	Shire
1657	G. W. Shelhamer	Riceville	Olney 20998	Percheron
17	W. D. McCabe	Osage	Pilot Panic 4861 37792	Morgan Trotter
1345	Fred Worple	Alta Vista	Vermouth 16021	Percheron
2466	Richard Jordan	McIntire	Mack 47151	Percheron
2536	Frank Krulish	St. Ansgar	Magnus Boy 12545	Clydesdale
2813	C. B. Wilkes	Riceville	Lofty 22202	Percheron
2833	St. Ansgar Horse Co.	St. Ansgar	Versailles 25196 (45415)	Percheron
2889	Richard Jordan	McIntire	Governor Roosevelt 23185	Percheron
2888	H. A. Skinner	Riceville	Dancing Master 33349	Trotter
2940	J. H. Penny	Stacyville	Canaillard 21514	Trotter
2957	J. C. Kathan	Osage	Kentola 44288	Trotter
2956	J. C. Kathan	Osage	Norvaillis 443107	Trotter
3068	Riceville French Coach Horse Co	Riceville	Vercingetorix 3292	French Coach
3062	Wert Roe	Riceville	Kimberley 27346 (46790)	Percheron
3240	Herbert Fletcher	Osage	Mercure (630)	French Draft
3582	C. H. Duenow	St. Ansgar	Castalet 47641	Percheron
3585	Richard Dorsey	Osage	Ridgley 10182	French Draft
3700	Richard Dorsey	Osage	Vermont 24408 (2568)	Percheron
4025	G. H. Judd	Riceville	Stewart Manor 45755	Trotter
4153	O. H. Thorson	St. Ansgar	Germinal 43745 (56292)	Percheron
4156	O. H. Thorson	St. Ansgar	Emmermann (6701)	East Friedland Coach
4173	A. Bridges	Riceville	Glen B 40137	Trotter

MONONA COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
890	Moorhead Imported Percheron Co.	Moorhead	Bequin (43629)	Percheron
889	E. E. Richards	Moorhead	Schley 30716	Percheron
888	C. L. Watkins	Whiting	Billy Bartlett 35827	Trotter
1493	Anton Hanson	Soldier	Courcival 27412 (45661)	Percheron
1494	M. B. Hildreth	Soldier	Ethan Allen 30974	Percheron
1780	A. L. Erskine	Castana	Black Beauty II 33375	Percheron
2195	J. Gries	Ute	Bayard 27400 (48374)	Percheron
2437	H. Koth	Monona	Major Glencoe 9173	Clydesdale
2485	J. A. Sarff	Whiting	Vinarold 38107	Trotter
2658	W. W. Griffith	Onawa	Prince Soliman 43382	Percheron
2762	G. C. Harrison	Blencoe	Amour 26914 (45827)	Percheron
2763	G. C. Harrison	Blencoe	Marquette 40052	Percheron
3071	S. D. Jewell	Whiting	Mat Kane 31575	Trotter
3151	A. V. Van Dorn	Rodney	Bruno 33739 (46059)	Percheron
3197	Onawa & Blencoe Horse Co.	Onawa	Raisonnable 24711 (45404)	Percheron
3679	Henry Hall	Whiting	Bay Luke 9370	French Draft
3687	Mapleton Percheron Horse Co.	Mapleton	Sarthois 43100 (60900)	Percheron
3999	James Hall	Whiting	Leslie 46882	Percheron
4112	W. W. Griffith	Onawa	Pompon 25739 (48499)	Percheron
3455	Ole K. Lee	Mapleton	Bouncer 48058	Percheron

MONROE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
401	J. F. Fitzpatrick	Georgetown	Alfred 297 (9)	German Coach
171	J. A. Smith	Albia	Keota Mesmerist 24848	Percheron
150	T. B. McDonald	Lovilia	Wick Spencer 12511	Trotter
107	L. A. McCreery	Albia	Castleman 16072	Trotter
88	Ira Noble	Albia	Roma 19920	Percheron
87	Ira Noble	Albia	Red Maple 33985	Trotter
205	W. B. Griffin	Albia	Ernest Wilton 26829	Trotter
207	W. B. Griffin	Albia	Paulus 17248	Percheron
206	W. B. Griffin	Albia	Belding 27923	Trotter
299	Farmers' Mutual Horse Co.	Albia	The Saint (20971)	Shire
59	Fred Galliers	Albia	Mark 5696	Shire
551	A. Scieszinski	Melrose	Putnam 8755	Clydesdale
1303	J. R. Love	Albia	Gideon D. 7647	Shire
1382	J. S. Quinn	Melrose	Michel (29753)	Percheron
1564	Lovilia Shire Horse Co.	Lovilia	Wenlock Thumper 6325 (20153)	Shire
1693	J. F. Roney	Melrose	Brutus 5224	Shire
1694	J. F. Roney	Melrose	Newaygo 9192	Trotter
2152	Avery Horse Co.	Avery	Chacal 41415 (58077)	Percheron
2172	J. R. Harker	Ute	Corsair 40934	Percheron
2217	J. F. Coleman	Melrose	Osceola Banker 8830	Shire
1277	Ira Robinson	Albia	Loulon 28367 (48118)	Percheron
2334	J. J. Mullin	Melrose	Fleurus 14851 (58414)P	French Draft
2629	Avery Horse Co.	Avery	Dunois 28439 (45239)	Percheron
2567	J. R. Love	Albia	Bluff Creek Tom 8185	Shire
2568	J. R. Love	Albia	Dick Monroe 8186	Shire
2826	J. R. Love	Albia	Black Peter 8723	Shire

MONTGOMERY COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
535	F. L. Steninger	Red Oak	Cherbourg 24274 (44003)	Percheron
536	F. L. Steninger	Red Oak	The Rogue 5413	Shire
210	J. D. Gourley	Villisca	Villisca General 5210	Shire
514	T. J. Reznor	Stennett	Fruitier 40415 (48530)	Percheron
1223	J. H. Thompson	Elliott	McKinley III 7017	Shire
1222	J. H. Thompson	Elliott	Creston Archie 3408	Shire
1253	A. C. Weidman	Red Oak	Raynal 25163 (44651)	Percheron
1312	Elliott Draft Horse Co.	Stennett	Girton Rogue 5348	Shire
2294	C. E. Thompson	Elliott	Creston Boy 7968	Shire
2709	J. E. Farmer	Villisca	Albert Margrava 42964	Trotter

MONTGOMERY COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2713	M. M. Smith	Villisca	Tribsign 45044	Trotter
2729	Henry Ebert	Red Oak	Francois II 40111	Percheron
246	F. E. Shires	Elliott	Pierre 10912 (3425)	French Draft
3036	C. P. Van Valkenburg	Villisca	St. Hilaire 42229 (48656)	Percheron
3070	C. P. Van Valkenburg	Villisca	Cafe 48317 (55411)	Percheron
3102	D. B. Gunn	Red Oak	Gamaleon 7825	Trotter
3211	Jno. P. Warne	Villisca	Black Dewey 15768	French Draft
3101	D. B. Gunn	Red Oak	Plum Right 4945 37341	Morgan Trotter
3281	R. S. Light	Villisca	Valdyne 42490	Percheron
3466	D. B. Gunn	Red Oak	Delta 32379 (46136)	Percheron
3529	R. S. Light	Villisca	Red Toler 11226	Trotter
3765	Wm. Arnold	Red Oak	Major F. 8887	Shire
4016	Imrie Bros.	Red Oak	Turbulent 29982 (48558)	Percheron
4070	Eliott Draft Horse Co.	Stennett	Bury Banker 6688 (17829)	Shire
4117	Keeper, C. L. Williams	Red Oak	Road Bird Jr. 39973	Trotter
4172	T. L. Quinn	Elliott	Dan Walton 45076	Trotter
4357	Thos. Hornby	Elliott	Gernot 291 (1205)	German Coach
4358	Grant Draft Horse Co.	Grant	Wentworth Hero 9196 (24797)	Shire
358	Pilot Grove Horse Co.	Red Oak	Rival 43256	Percheron
359	French Draft Horse Co.	Elliott	Dreyfus 9365	French Draft
223	C. P. Van Valkenburg	Villisca	Fred 11735 50725	French Draft Percheron

MUSCATINE COUNTY

654	G. A. Milnes	West Liberty	Bonneval 32337 (45494)	Percheron
653	G. A. Milnes	West Liberty	Volunteer 22521	Percheron
1102	Wilton Horse Breeders' Ass'n.	Wilton	Gaillard 28737 (44740)	Percheron
1104	W. A. Heck	West Liberty	The Sheriff 38114	Trotter
1106	P. N. Gibson	West Liberty	Boissy 25151 (45438)	Percheron
1105	P. N. Gibson	West Liberty	Cherbourg 2078	French Coach
1114	M. P. McKeown	Cranston	Keota Brevet 21660	Percheron
1132	E. J. Brown & R. T. Shannon	Nichols	Porto 1584 (20878)	Belgian
1133	E. J. Brown & R. T. Shannon	Nichols	Bon Micephorus 6063 (17189)	Shire
1125	E. A. Poole	West Liberty	Russell Edsal 34782	Trotter
1211	Chas. H. Stone	Muscatine	Mammon 2020	Shetland Pony
1324	E. F. Richman	Muscatine	Pancantara 39080	Trotter
1325	E. F. Richman	Muscatine	Red Knight 13880	Trotter
1348	M. B. Walters	West Liberty	Tam-Tam 14239 (19079)	Percheron
1367	F. W. Dickey	West Liberty	Lindsay Dale 40391	Trotter
1411	E. F. Richman	Muscatine	Lindas Duke 26377	Percheron
1178	Union Stock Co.	Conesville	Riverain 25596 (45452)	Percheron
346	Fred Waters	West Liberty	Canotier 24445 (44604)	Percheron
1769	Boyd Bros	Conesville	Jupiter of Worsley 5373 (16202)	Shire
3112	F. A. Pike	Nichols	Saxon Jet 8867 (21843)	Shire
3248	Will Maxwell	Conesville	L'Ami 21190	Percheron
3155	Harry Hartley	West Liberty	Jules 22675 (43574)	Percheron
3572	F. W. Dickey	West Liberty	Saulerton 43874	Trotter
3963	G. A. Warfield	Muscatine	Colosse 25238	Percheron
4088	W. H. Liebbrand	Muscatine	Major Gamaleon 47638	Trotter
4089	W. H. Leibbrand	Muscatine	Al Rene W. 45540	Trotter
4108	D. Connell	Muscatine	Guy Sulten 26645	Trotter
4175	P. N. Gibson	West Liberty	Reseda 2074	French Draft
4174	P. N. Gibson	West Liberty	Forban 15657 (22813)	Percheron
4289	Iowa Township Draft Horse Co	West Liberty	Lezard 51120 (56722)	Percheron
4335	Chet Phillips	West Liberty	Concourse 52440 (64754)	Percheron
1817	H. J. & B. W. Brown	Nichols	Jerry 41599	Percheron
4443	Joe Nyenhuis	Muscatine	Counsel Attor 41013	Trotter

O'BRIEN COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
431	Schneider & Saupe	Sheldon	Algerien 12260 (52673)	French Draft
168	Big Four Belgian Breeding Ass'n	Sheldon	Mon Desir 1694 (23708)	Belgian
189	C. W. S. Gilson	Sanborn	Gilford Bevans 42796	Trotter
70	A. O. Crooks	Primghar	Nailstone Don 5731 (16845)	Shire
42	Alex Scott	Paullina	Pride of Iowa 10954	Clydesdale
432	Schneider & Saupe	Sheldon	Maskomita 24661 (43287)	Percheron
662	George G. Kellum	Paullina	Berton 32949	Percheron
661	George C. Kellum	Paullina	Prince Paullina 30670	Percheron
705	W. A. Smith	Paullina	Chansler 35747	Percheron
706	W. A. Smith	Paullina	Pindore 42227 (47470)	Percheron
1048	H. C. Thayer	Primghar	Condon 21519	Percheron
1137	J. R. Tibbets	Hartley	Prince Bless 5178	Morgan
1517	David S. Taylor	Sheldon	Seductuer 40077	Percheron
1549	R. C. Jordan	Sutherland	J. D. M. 0166	Trotter
1623	John Breme	Hartley	Rodney Rex 43475	Trotter
1624	R. P. Powers	Hartley	Altro 35068	Trotter
1641	G. W. Sherwood	Sheldon	Major Bell 32605	Trotter
1642	G. W. Sherwood	Sheldon	Clarke 41101	Trotter
1643	G. W. Sherwood	Sheldon	Lockheart 6864	Trotter
1644	G. W. Sherwood	Sheldon	Woodford Wilkes 2538	Trotter
2232	P. J. Weir	Sheldon	Corbit 32946	Percheron
2233	P. J. Weir	Sheldon	Thorney Royal 8631 (19182)	Shire
2235	B. F. Shirk	Sutherland	Melito 23352	Percheron
2247	W. C. Kimmell	Sheldon	Hector 31092	Percheron
2490	W. J. Ullman	Paullina	Allegro 20046	Percheron
2605	Noble McDonald	Gaza	Gay Montrose 9886 (9916)	Cyldesdale
2687	Thos. Prendergast	Sanborn	Bartle 14509	French Draft
2442	W. J. Buffington	Paullina	Stuntney Golden King 5744	Shire
2545	Wm. Kluender & Co.	Paullina	Kisposcki 50535 (52254)	Percheron
2586	H. E. Brown	Primghar	Chambouder 45400	Percheron
2587	H. E. Brown	Primghar	Archer 45401	Percheron
2730	Richardson & Culp	Sutherland	Coronet 46272	Percheron
3181	Wilson Bros.	Primghar	Tom Mack 14945	Trotter
3212	Sam Webster	Archer	Herzuba (Vol. 7)	Oldenberg Coach
3252	P. D. Fuller	Sutherland	Temeraire 45807 (62265)	Percheron
3289	A. C. Bailey	Sutherland	Mazzeppa 48319	Percheron
3325	McCracken & Harrington	Paullina	Ergo	Oldenberg Coach
3045	Thos. W. Farnsworth	Sanborn	Mango 34577	Trotter
3431	Wm. F. Schilds	Paullina	Martin II 48090	Percheron
3645	W. L. Reager	Hartley	Hartley Jim 15566	Trotter
3673	G. Wesslink	Sheldon	Student (Vol. 7)	Oldenberg Coach
118	D. I. Short	Sutherland	Fashion 1084	French Coach
3924	David Johnson	Sutherland	Marquis du Val 2969	Belgian
3967	T. E. Mann	Sutherland	Turbulent 43774 (46897)	Percheron
3983	M. S. Draper	Sutherland	Moncrieffe Matchless 410 (5327)	Hackney
773	I. E. Emery	Sutherland	Wyomie 29674	Trotter
4038	John Keene	Sutherland	Green Mountain Jr. 5512	Morgan
4077	Dan Soehren	Moneta	Bonjour 2300 (34656)	Belgian
4153	Chas. Burns	Sanborn	Leroy 50221	Percheron
4260	Black Joe Horse Co.	Hartley	Black Joe 20838	Percheron
4301	Edo Peters	Hartley	Paulus 22645 (43133)	Percheron
4331	Fred Gehrke	Hartley	Julian 1186	Cleveland Bay
4333	Paul Kahler	Hartley	Captain George 9085	Shire
2414	Max J. Drefke	Paullina	Gilbert 1094	Cleveland Bay

OSCEOLA COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
60	W. S. Foley	Melvin	Prudent 26736 (48349)	Percheron
1202	Jno. N. Jackley	Ashton	Kirsch II 11837	Percheron
1349	Ashton Horse Co.	Ashton	Bayard Berni 1845 (23388)	Belgian
1350	L. Pommer & H. H. Wubbena	Ashton	Fayot 52453 12928	Percheron French Draft
1336	H. E. Dean	Ocheyedan	Durben 40011	Trotter
1830	Jno. Price	Ocheyedan	Manliness 25546	Percheron
614	J. & N. Frese	Sibley	Gabels Victor 7124	Shire
2335	G. E. Mackinson	Sibley	Arvola 3307	German Coach
2336	G. E. Mackinson	Sibley	Fusain 28291 (45804)	Percheron
2681	G. E. Mackinson	Sibley	Columbus 8279	Shire
2682	G. E. Mackinson	Sibley	Matteval 44814 (54795)	Percheron
2793	Sibley Belgian Horse Co.	Sibley	Edgard 2622 (17888)	Belgian
2859	R. Klatt	Sibley	Knightly King 15997	Trotter
2935	Geo. Hamilton & Son	Ocheyedan	Hero Hobson 31544	Trotter
3089	G. W. Snyder	Sibley	Louis de Fallais 1244 (14696)	Belgian
3184	Joe Cload	Ocheyedan	Fulgurant 26704 (45618)	Percheron
3288	G. W. Patterson	Osceola Co.	Alban 46137 (64433)	Percheron
3364	G. W. Patterson	Osceola Co.	Rataplan 30390 (45062)	Percheron
3053	John S. D. Pell	Allendorf	Keota Mounton 11872	Percheron

PAGE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
209	W. L. Lundy	Clarinda	Axlon 40254	Trotter
625	F. P. Barr	Clarinda	Alaxandre 13083	French Draft
624	F. P. Barr	Clarinda	Napoleon 13030	French Draft
791	W. H. Dutton	Coin	Champion 566 (2856)	Belgian
853	Edward Davison	Clarinda	Nathanson 5973	Thoroughbred
1034	Jno. Nothwehr	Yorktown	Caporal 32662 (45508)	Percheron
1016	A. A. Brush	Shenandoah	Luculus (48711)	Percheron
992	East River Percheron Horse Co.	Clarinda	Capitane 32425 (47591)	Percheron
1019	Wm. Hiser	Essex	Vernot (57364) 45572	Percheron
1193	Wall Street Horse Co.	Hepburn	Danube 5703 (44226)	Percheron
1194	Wall Street Horse Co.	Hepburn	Tricotteur 26073 (44684)	Percheron
1265	J. M. Bryson	Clarinda	Prince Oneer 35763	Trotter
1285	J. A. Latimer	Shenandoah	Dewey 27475	Percheron
1619	Thos. Wiggins	Coin	Merfield Rival (7787)	Shire
1702	Jno. Rurode	Coin	Roublard 14082 (22897)	Percheron
1735	G. G. Fleener	Clarinda	Darius 8883	French Draft
1736	G. G. Fleener	Clarinda	Black Hawk 14734	French Draft
1737	G. G. Fleener	Clarinda	Mintaka 9676	French Draft
1799	Wm. F. Schenck	Clarinda	Creston King 6026	Shire
1811	College Springs Horse Co.	College Springs	Brilliant III 10086	French Draft
2104	R. A. Duncan	Shambaugh	Roy 39451	Trotter
2105	R. A. Duncan	Shambaugh	Brooklyn 11101	French Draft
2136	F. P. Barr	Clarinda	Duke of Wellington 13084	French Draft
2141	W. F. Hopker	Northboro	Beranger 35566 (48918)	Percheron
2140	W. F. Hopker	Northboro	Francis 41697	Percheron
4214	A. G. Harris	Northboro	White Nemesis 34581	Trotter
2122	A. G. Harris	Northboro	Hempfield Sampson Jr. 8774	Shire
2330	B. F. Allender	Essex	Charmant 47514 (56243)	Percheron
2791	W. T. Goodman	Coin	Gilbert 14034	French Draft
2800	C. M. Cowen & J. F. Chase	Shenandoah	Drift Allerton 36428	Trotter
2134	F. P. Barr	Clarinda	Pourquoi Pad III 6358 (20122)	French Draft
3153	J. B. Lawson	Norwich	Nonant III 6790 (14568)	French Draft
2367	A. G. Harris	Northboro	Stuntney Rooineck 8859 (22834)	Shire
3258	Lewis Annam	Clarinda	Sampson 47510	Percheron
3259	H. W. Runyon	Coin	Banker 4829	Shire
3277	John H. Kendall	Clarinda	Gazon 26912 (45979)	Percheron
3428	K. G. Herren	Clarinda	Axett 43532	Trotter
3462	E. T. Farrens	Clarinda	Kimball 18235	Trotter

PAGE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3491	Wolfe & McFarrin	Braddyville	Keota Lord 20671	Percheron
3492	O. V. Hurdle	Braddyville	Onrosemedium 36162	Trotter
3490	Farmers Horse Co	Braddyville	Palatin 26722 (24376)	Percheron
3552	B. H. McClintock	Essex	Greenlander 3552	Trotter
3557	W. R. McClintock	Essex	Colonel Greenlander 45597	Trotter
3666	Wm. Hoppock	Shenandoah	Consul Junior 282	Oldenburg Coach
3903	W. E. McKee	Braddyville	Percheron Boy 26762	Percheron
3904	W. E. McKee	Braddyville	Search Light 7857	Shire
3930	M. W. Slaight	Clarinda	Keota 16222	French Draft
1191	Wm. Hizer	Essex	Gaulois 13559	French Draft
3766	W. E. McKee	Braddyville	Hero III 8349	Shire
4321	Elmer M. Gibson	Coin	Longworth 45596	Percheron
4349	J. A. DeCamp	Shenandoah	Madere 29270 (48310)	Percheron
4350	J. A. DeCamp	Shenandoah	Ed Little 11486	French Draft
4361	Pitman Bros.	Clarinda	Stuntney Cricket 9749 (23749)	Shire
4348	J. A. DeCamp	Shenandoah	Major McKinley 41047	Percheron
4380	N. J. Thomas	Clarinda	G. W. S. 28589	Trotter

PALO ALTO COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
228	N. J. Wright	Cylinder	Freedom 33697	Percheron
153	J. J. Steil	Emmetsburg	Ben Otto 23370	Percheron
36	H. A. Thomas	West Bend	Moliere Jr. 25762	Percheron
418	Melvin Fisk	Curlew	Ellerslie Fisk 32546	Trotter
1103	Osgood Percheron Horse Co.	Osgood	Maupas 40460 (51903)	Percheron
43	H. A. Mason	Ruthven	Duke 22798	Percheron
1631	Jonas Mantz	West Bend	Carpare 2237 (25122)	Belgian
2030	M. F. Coonan	Emmetsburg	Joe Weitzel 21522	Trotter
2343	J. B. Jackson	Osgood	Lors Rene Jr. 43857	Trotter
2397	J. J. Steil	Emmetsburg	Ergo A. 40349	Trotter
2132	J. R. Frame	Cylinder	Vigoureux 22883 (43362)	Percheron
2502	E. D. Spencer	Emmetsburg	Bardon Blaze 6450 (15973)	Shire
2600	J. J. Steil	Emmetsburg	Aid Dunton 45059	Trotter
2631	W. H. Dempsey	Curlew	Kilsley Bonny Tom 5291 (17426)	Shire
2867	Hardi Horse Co.	Graettinger	Hardi 28370 (48420)	Percheron
2890	C. P. McKowen	Rodman	Indoc 524	French Draft
3120	J. H. Nolan	Ruthven	Archer Boy 11941	Clydesdale
2372	B. F. Frazier	Ayrshire	Dragon 50888 (59398)	Percheron
3185	Claer, Debolt & Co.	Ayrshire	Lord Minto 43403	Percheron
3241	Clarence Maxwell	West Bend	Cyclone 7230	Shire
3368	A. E. Harrison & Co.	Ayrshire	Waterloo 13491	French Draft
3417	B. F. Stanton	Ruthven	Wilkie Simmons 23057	Trotter
385	Jos. F. Nolan	Ruthven	The Serpent 34861	Trotter
3183	Fred Johnson	Ruthven	Sidi (46215)	Percheron
141	Stanton & Lee	Ruthven	Figaro 31385	Percheron
4276	Claer, Debolt & Co.	Ayrshire	Marquis 51326	Percheron
4277	Claer, Debolt & Co.	Ayrshire	Cadix 45404	Percheron
4405	Thos. Claer	Ruthven	St. Pierre 58096	Percheron
4406	Thos. Claer	Ruthven	King Midas 50651	Percheron
1872	C. J. Brown	West Bend	Noble Prince II (22629)	Shire
4480	D. D. Johnson & Sons	Curlew	Draughtsman III 9207	Shire

PLYMOUTH COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1589	Martin McNamara	Remsen	(24194) Bramble 20841	Percheron
1714	Nick Thill	Oyens	Theodore 140	Suffolk
1793	T. J. Wilson	Kingsley	Ondawa (Vol. 6, p. 589)	Thoroughbred
1983	Held Bros.	Hinton	Jonathan 2 (1302)	Oldenburg Coach
1882	Held Bros.	Hinton	Enzain 3107	German Coach
2123	D. M. Baker & Co.	Merrill	King Rayon 25624	Percheron

PLYMOUTH COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2282	Remsen Percheron Horse Co.	Remsen	Sosthene 33964 (53249)	Percheron
2630	A. R. Whitney	Akron	Volubilis 3405	French Coach
2704	John Luken	Le Mars	Railleur 1196 (Vol. 9)	Belgian
2922	Ireton & Struble Percheron Horse Co.	Struble	Premier 40170 (51434)	Percheron
3104	J. W. Patterson	Akron	Premier Prince 9189	Clydesdale
1560	Martin McNamara	Remsen	Perche II 40820	Percheron
3406	E. P. Harris	Le Mars	Parker Hitt 40743	Trotter
3681	Neptune Horse Co	Kingsley	Selim 24114	Percheron
3984	West Branch Percheron Horse Co.	Merrill	Joques 40949	Percheron
4181	Wm. Borinsky	Akron	Mabille 23069 (44574)	Percheron
4290	W. H. Morse	Akron	Gallopore 16944	Percheron
4312	Held Bros., P. Schneider & A. Helm	Hinton	Carabin 52515 (65747)	Percheron
4315	Mai & Ludwig	Remsen	Columbus 35619 (48766)	Percheron

POCAHONTAS COUNTY

452	Alex Barber	Rolfe	Eckhart 30745	Trotter
454	A. D. Cleal	Rolfe	Saturne 25704 (44161)	Percheron
357	L. N. Ellis	Laurens	Sim Sim 33073	Trotter
372	H. F. Toben	Palmer	Brilliant de Lieffe 23810	Belgian
104	J. W. Brock	Plover	Lavance 32949	Trotter
103	J. W. Brock	Plover	Audubon Boy 12842	French Draft
304	Jacob Winegarden	Pocahontas	Martin IV 41848	Percheron
293	W. G. Runyan	Havelock	Rob Roy 9442	French Draft
321	W. E. Campbell	Gilmore City	Oliver 34870	Percheron
684	W. A. Kyle	Laurens	Financier II 1440 (25362)	Belgian
726	Wm. Steen	Havelock	Martin V. 13123	French Draft
818	A. S. Wood	Fonda	Stayr 41462	Trotter
877	Jas. Frakjar	Rolfe	Prince Ponk 11889	Clydesdale
876	Jas. Frakjar	Rolfe	Prince Lynedoch 9088	Clydesdale
1200	E. M. Kellogg	Gilmore City	Kruger 32452	Trotter
1461	Lilly Horse Co.	Fonda	Paulin 23076	Percheron
1629	O. F. Edwards	Havelock	Ralph 1629	Percheron
784	Lind & Charlton	Rolfe	Martin 17067 (35482)	Percheron
2270	M. D. Wolcott	Gilmore City	Vulcain 42906	Percheron
2340	W. A. Galbraith	Fonda	Fontanelle 26782	Percheron
2434	Lyman Bros.	Gilmore City	Dictator 10759	French Draft
2435	M. L. Miller	Pocahontas	Keota Thrive 2485	Percheron
2436	M. L. Miller	Pocahontas	Cook 25138	Percheron
2439	Alex Parker	Rolfe	Orville 29276	Percheron
2441	W. G. Runyan	Havelock	Univers 47773 (59594)	Percheron
2271	Wilder Small	Gilmore City	Leward 35762	Percheron
2573	L. A. Dumond	Fonda	Black Diamond 42748	Percheron
2574	B. F. Barber	Fonda	La Porte Boy 28849	Trotter
2761	Olson Bros.	Palmer	De Foe 15528	French Draft
1263	B. F. Barber & L. A. Dumond	Fonda	Borolyptol 32229	Trotter
2885	H. D. Brinkman	Rolfe	Martin VII 13125	French Draft
2895	W. A. Elliott	Pocahontas	Prince Thayer 44061	Trotter
2930	Frank Short	Rolfe	Capitaine 41449 (64119)	Percheron
2950	Harvey Eaton	Fonda	Mere Harold 5639 (16251)	Shire
3040	W. P. Hopkins	Laurens	Haiti 34283 (51666)	Percheron
3041	W. P. Hopkins	Laurens	Neptune-Pacha 585 (4212)	Belgian
2269	G. C. Grove	Rolfe	Deneau 35759	Percheron
1613	T. E. Meredith	Plover	Milord de Reille 979 (13990)	Belgian
3634	A. D. Ryon	Laurens	Alfo 42768	Trotter
3821	Clark Perry	Fonda	Montagnard 2743 (33476)	Belgian
2610	Cal Saylor	Palmer	Maroc 41881 (63223)	Percheron
4027	W. G. Runyon	Laurens	Western Lad 9248 (24187)	Shire
1115	Ferguson & Miller	Palmer	Kruger 29902 (48266)	Percheron
215	Thos. & Chas. Eberle	Laurens	Raithby Tommy 6853 (19043)	Shire
132	Will E. Campbell	Gilmore City	Bailly 26932 (45965)	Percheron

POLK COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
402	Campbell Belgian Horse Co.	Campbell	Faro de Raille (16838)	Belgian
86	Chas. Irvine	Ankeny	Gabriel 1286 (25336)	Belgian
161	A. K. Good	Ankeny	Grenat 41001 (64205)	Percheron
162	A. K. Good	Ankeny	Nailstone Teddy 7980 (22959)	Shire
270	T. J. Shaw	Mitchellville	Major Consul 40342	Trotter
58	E. J. Boynton	Des Moines	Macklin 15881	Trotter
14	Lester Clark	Valley Junction	High Tide 26760	Percheron
15	Lester Clark	Valley Junction	Dewey 21748	Percheron
447	Commeggs & Stoll	Bondurant	Voltaire 10482	French Draft
541	G. W. Smith	Altoona	Creston Jerome 5978	Shire
502	Jas. A. Sage	Ankeny	Stuntney King Cole III 3676 (10538)	Shire
501	Jas. A. Sage	Ankeny	Newton Corsair 5557	Shire
495	Cresap Bros.	Altoona	Stanley 40944	Percheron
503	Jas. A. Sage	Ankeny	Oku 7984 (22654)	Shire
594	Jas. Watt	Des Moines	Hail Cloud 23606	Trotter
517	Saylor Horse Co.	Ankeny	Duc d' Aumale 22667 (43506)	Percheron
570	J. W. Day	Des Moines	Miley Boy 34332	Trotter
633	J. N. McClellan	Des Moines	Vinicus 33800	Trotter
639	R. T. Mally	Berwick	Sumner G. 32362	Trotter
675	Farmers' Belgian Horse Co.	Mitchellville	San Souci de Bett (29460)	Belgian
676	Beaver Valley Horse Co.	Grimes	Fourire 34325 (46288)	Percheron
632	L. J. Ringgenberger	Sheldahl	Don A. Hail 43433	Trotter
606	C. L. Weisner	Grimes	Fritz 15748 (24044)	Percheron
465	N. Ware	Runnells	Iowa 11724	French Draft
763	Walter Ferguson	Runnells	Keota Still 10190	French Draft
798	Tom James	Des Moines	Barondale 20184	Trotter
1119	W. J. Crawford	Des Moines	Gold Miner 30411	Trotter
1173	N. J. Otto	Des Moines	Nabuko 27536 (44298)	Percheron
1227	N. W. Murrow	Mitchellville	King Milord 33762	Percheron
1317	Big Four Horse Co.	Grimes	Tampon 26702 (45561)	Percheron
1321	Poweshiek Percheron Horse Co.	Farrar	Carvalho (45130)	Percheron
1462	J. W. Anderson & Son	Des Moines	Birdeer 37105	Trotter
1521	Gust Alf and Otto Engstrom	Sheldahl	Refrigerant 35218 (52501)	Percheron
1616	Henry Wagner	Ankeny	Matchless Junior 5555	Shire
1660	W. W. Garner	Des Moines	Signor 2259 (31806)	Belgian
1663	W. W. Garner	Des Moines	Caesar de Heusden 2256 (29494)	Belgian
1664	W. W. Garner	Des Moines	Dewey 24241	Percheron
1665	W. W. Garner	Des Moines	Daniel 41273 (57922)	Percheron
1667	W. W. Garner	Des Moines	Nogentais 41272 (52852)	Percheron
1723	Willard Ferguson	Des Moines	Conro 25761	Percheron
1765	A. J. Good	Ankeny	British Ensign III 7979 (22160)	Shire
1168	G. W. Smith	Altoona	Midnight 31057	Percheron
729	W. W. Garner	Des Moines	Merry Legs 8309	Shire
2145	Ivy Horse Co.	Altoona	Montmirail 31784 (44304)	Percheron
2403	W. C. St. Clair	Des Moines	Taupin 42878 (56415)	Percheron
271	F. G. Thornton	Altoona	Teddy Lockheart 35772	Trotter
2487	Hunter, Hall & Bachman	Ankeny	Udell 32621	Trotter
2667	C. W. Schaeffer	Mitchellville	Baptiste (10552)	Belgian
2456	A. K. Good	Ankeny	Black Lad II 8681 (23932)	Shire
2575	F. Berkey	Ankeny	Tranquille 41396 (64035)	Percheron
92	N. Bartholomew	Des Moines	Galileo Rex 12347	Trotter
3001	E. A. Elliott	Des Moines	Wilbrino Boy 37459	Trotter
3186	C. I. Stanton	Valley Junction	Iason U. 0917	Trotter
3265	F. M. Winfrey	Runnells	Silver Duke 15774	French Draft
3374	G. W. Grigsby	Sheldahl	Martin de Hazior 2445 (31862)	Belgian
3398	F. C. Bellairs	Valley Junction	Meadowthorpe 37055	Trotter
3400	W. W. Garner	Des Moines	Vimoutiers 41763 (60933)	Percheron
3398	W. W. Garner	Des Moines	Tambour de Genly 2566	Belgian

POLK COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3410	S. O. Longnecker	Elkhart	Mendota Champion 6051	Shire
3567	W. W. Garner	Des Moines	Dandola 31267 (48378)	Percheron
3568	H. P. Wilkinson Bros.	Mitchellville	Norman Emperor 8543 (23544)	Shire
3604	W. W. Preston	Avon	Consul the Second 1315	German Coach
3650	W. W. Garner	Des Moines	Louis d'Acesse 2567	Belgian
3682	Chas. Irvine	Ankeny	Abraham 13365	French Draft
3329	Wyoming Cattle Co.	Des Moines	Charming Lad 11297	Clydesdale
4116	Lester Clark	Valley Junction	Alcindor 51440 (56649)	Percheron
4196	Ashworth Bros.	Valley Junction	Ellerslie Rex 47717	Trotter
4259	F. Berky	Ankeny	Andromede 53117 (66441)	Percheron
4171	S. C. Morton	Avon	Talma 51441 (60729)	Percheron
4320	John E. Brown & Son	Mitchellville	Favor 15835	French Draft
4344	Chas. Irvine	Ankeny	Creon 51804	Percheron
4343	Chas. Irvine	Ankeny	Coquet 2766 (41852)	Belgian
4396	J. F. Randolph	Ankeny	Ubert 50255	Percheron
4401	D. Weeks	Des Moines	Star Russell 1902	Saddle Horse
4485	W. W. Garner	Des Moines	The Hero 51679	Percheron

POTTAWATTAMIE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
149	M. C. Robinson	Avoca	De Wet 34618	Trotter
449	Chas. Kingman	Avoca	Reno 11014	French Draft
259	Neola Boomer Belgian Horse Co.	Neola	Iowa 1404 (25326)	Belgian
258	Wm. Casson	Neola	Major II 22922	Percheron
242	Underwood Belgian Horse Co.	Underwood	Perfait de Hantes 1405 (20334)	Belgian
588	Albert Peterson	Hancock	Arton 32308 (44548)	Percheron
1147	T. H. Broughton & A. J. Stuart	Walnut	Prince of Belges 1818	Belgian
627	Macedonia Percheron Horse Co.	Macedonia	Raspail 33970 (48599)	Percheron
714	C. S. Price	Macedonia	Beacon 22148	Percheron
771	Ben Gress	Walnut	Bonny Tom II 6828 (18544)	Shire
849	T. S. Jolliff	Avoca	Red Chaser 36708	Trotter
850	T. S. Jolliff	Avoca	Tryner 27776	Trotter
841	Jos. Jungferman	Neola	Nailstone Rare Lad 6317	Shire
833	L. Sheets	Carson	Nimble 8536	Trotter
1094	H. E. Patterson	Avoca	Titan 2457	French Coach
1093	H. E. Patterson	Avoca	Fil-der-fer 25308 (44716)	Percheron
1148	Edward Falk	Oakland	Pride of Oakland 0713	Trotter
1243	E. Morrison	Neola	Villars 28079 (4883)	Percheron
1365	L. Kastner, Jr.	Council Bluffs	Brockway 11314	French Draft
1604	Burke Bros.	Walnut	Rock Rover 1604	Shire
1738	Wm. Converse	Hancock	General Grant 4202	Clydesdale
1975	Leonard Everett	Council Bluffs	Banker 11384	French Draft
2280	Harrison Smith	Avoca	Teddy M. 38001	Trotter
2328	Stageman Bros.	Council Bluffs	Nero 34885	Percheron
2365	S. P. White	Oakland	Samson 7967	Shire
2500	Wm. Shaw	Council Bluffs	Lieutenant 30582 (45345)	Percheron
269	C. P. Wasser & G. B. McClellan	Avoca	Lord Linton 12690	French Draft
2452	E. T. Waterman	Council Bluffs	Caffrey 2d 5288	Morgan
2534	Treynor Imp. Percheron Horse Co.	Silver City	Romeo (48568)	Percheron
2724	H. J. Giese	Bentley	Helmuth 1299	German Coach
2750	Prairie Rose Horse Co.	Walnut	Chenimeau 31446 (48510)	Percheron
2775	Lew Brown	Avoca	Ring Rathbun 35429	Trotter
2831	J. O. Frizzell	Oakland	Togo 46093	Percheron
2751	Prairie Rose Horse Co.	Walnut	Asman 1977 (1095)	German Coach
2935	Botna Valley Horse Co.	Carson	Coeur de Lion 26708 (46414)	Percheron

POTTAWATTAMIE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2929	Underwood Belgian Horse Co.	Underwood	Perfait De Hautes 1405 (20334)	Belgian
744	Rassmussen & Pruess	Walnut	Royal Defender 9692	Clydesdale
3067	Henry Parker	Macedonia	Dawson 27937	Percheron
3245	W. A. Lewis	Council Bluffs	Rendlesham Politician (3159)	Suffolk
3351	Leonard Everett	Council Bluffs	Papillon 32836 (48304)	Percheron
3383	Jos. A. Johnson	Oakland	Barbancon 924 (13438)	Belgian
3384	Frank Collard	Oakland	Wrangel 105 (556)	German Coach
3600	C. A. Ronk	Macedonia	Driftmont 43336	Trotter
3678	Ira Nixon	Council Bluffs	Stuntney Brake 20064	Shire
3055	Geo. Foster	Dumfries	Martin 3362	Percheron
3918	B. P. White	Oakland	Black Harold 9055	Shire
834	W. W. Ronk	Macedonia	Morgan Whip 4300	Morgan
835	J. A. Burgin	Walnut	Jack E. 42191	Trotter
2717	Hoeppner	Avoca	Lacheur 35512 (48474)	Percheron
1007	Henry J. Stuhr	Minden	Championat 34512 (48681)	Percheron
4046	E. Morrison	Neola	Duc de Bragance 15656 (30632)	Percheron
4072	Hopp Bros.	Treynor	Walton 14903	French Draft
4240	Geo. Eckrich	Neola	Bon Dominant 6594 (19371)	Shire
4275	W. E. Campbell	Avoca	The Starter 41871	Trotter
4296	Sankey & Neilson	Walnut	Tourine 51195	Percheron
4297	Sankey & Neilson	Walnut	Nez 2592	French Coach
4411	H. D. Anderson	Macedonia	Abricot 42363 (63279)	Percheron
4479	J. H. McKowen	Honey Creek	J. W. G. 0553	Trotter

POWESHIEK COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
393	Montezuma Horse Co.	Montezuma	Paulus 22673 (43384)	Percheron
382	J. L. McIlrath	Hartwick	Malvern Glory 5405 (16799)	Shire
351	Jos. C. Johnston	Deep River	Caesar 27547 (47055)	Percheron
263	Guernsey Draft Horse Co.	Guernsey	King Harold 2d 6685	Shire
262	Guernsey Draft Horse Co.	Guernsey	Sans Souci 28972 (44260)	Percheron
186	Dr. A. E. Anger	Brooklyn	Doc Allerton 42167	Trotter
340	P. F. Smith	Montezuma	Montezuma Chief 35503	Trotter
338	P. F. Smith	Montezuma	Morgan Panic 5003	Morgan
315	D. T. Gorsuch	Montezuma	Iowa Boy 10533	Clydesdale
314	Thompson Miller	Brooklyn	Flambeau (26400)	Belgian
311	J. B. Gorsuch	Montezuma	Bristolin (25356)	Belgian
470	C. M. Adams	Grinnell	Thiers 27070 (45769)	Percheron
466	C. M. Adams	Grinnell	Charmant 25211 (42404)	Percheron
425	A. C. Thompson & Son	Grinnell	Chinois 30036	Belgian
577	Miles & Evans	Grinnell	Henry Ward Beecher 3036	Shetland Pony
590	A. Bramer	Guernsey	Creston Victor 5759	Shire
634	Barnes City Horse Co.	Montezuma	Regional 26083 (45302)	Percheron
685	W. H. Murphy	Hartwick	Vindex 4671	Morgan
622	M. Winchell	Malcom	Emilien 12046 (13396)	Percheron
404	E. J. Hadley	Grinnell	Ellerslie Russell 38817	Trotter
855	H. J. Schmidt	Grinnell	Jamin 1060 (12016)	Belgian
913	M. A. Latham	Searsboro	Keota Boatman 5805	Shire
1036	E. J. Korns	Hartwick	Princewick 2d 12139	Clydesdale
1037	E. J. Korns	Hartwick	Handsome Prince II 9486	Clydesdale
1167	B. B. Cransten	Deep River	Lillie's Prince 11085	Clydesdale
1205	W. F. Blain	Montezuma	Favor 20633	Percheron
1280	Ewart Belgian Horse Co.	Ewart	Carol (29756)	Belgian
1473	J. W. Johnson	Deep River	Stuntney Beckett (23740)	Shire
2244	Sugar Creeek Percheron Horse Co.	Searsboro	Bazard 27082 (45284)	Percheron
438	Frank Schultz	Hartwick	Pompon II 16290	Belgian
2238	J. L. McIlraith	Hartwick	Japonias 27985 (46830)	Percheron

POWESHIEK COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1501	M. L. Latham & Sons	Searsboro	Blocky 14550	French Draft
2571	Sheridan Belgian Horse Co.	Grinnell	Porte Drapeau 945 (15818)	Belgian
2732	S. G. Ingraham	Montezuma	Rendlesham Cromwell 252 (333)	Suffolk
2857	Fred Reed	Brooklyn	Matchless 5478	Shire
3056	Zack Hull	Brooklyn	Darby 33944	Percheron
510	A. Halstead	Grinnell	Lord Roberts 7037	Shire
1035	J. L. McIlraith	Hartwick	Princewick 12138	Clydesdale
3200	L. E. Anthony	Malcom	Prince Consort 8455	Clydesdale
3390	L. E. Anthony	Malcom	Dan Oline 45306	Trotter
3463	Charley Terpstra	Grinnell	Monarque 27135 (46788)	Percheron
1573	John Carter	Montezuma	Felix 12021 (12576)	Clydesdale
3575	E. E. Inman	Deep River	Girton Conqueror 5346 (18037)	Shire
3741	Wilkes Horse Co.	Grinnell	Wilton Wilson 44875	Trotter
3837	Miles & Evans	Grinnell	Brilliant Joe 50395	Percheron
4029	J. L. McIlraith	Hartwick	Buffalo de Wyt 2948	Belgian
4091	John Gabriel	Deep River	Faro d' Iseghem 2950 (41896)	Belgian
4141	H. J. Fick	Hartley	Grandini 23068 (44572)	Percheron
3284	Miles & Evans	Grinnell	Melrose W. 42541	Trotter
4285	Wm. Hagenlock	Grinnell	Polo 3897 (30398)	Belgian
4305	G. E. Tinker	Brooklyn	Bon Astur 8793 (21169)	Shire
4308	Wm. Hagenlock	Grinnell	Crofton Sirus 9305 (22228)	Shire
4310	Miles & Evans	Grinnell	Moteur 50745 (49911)	Percheron
4359	W. O. Woods	Malcom	Senator W. 33245	Trotter
4388	R. B. Cranston	Deep River	Silver Prince 12265	Clydesdale
4400	Charley Tarpstra	Grinnell	Pella Pride 12255	Clydesdale

RINGGOLD COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
280	W. F. Blackman	Delphos	Poppennheim 3315	German Coach
281	W. F. Blackman	Delphos	Ad Leitem 35931	Trotter
282	W. F. Blackman	Delphos	Fais (23048)	Belgian
34	E. S. Botleman	Diagonal	Creston Boy 38733	Trotter
643	J. A. Bliss	Diagonal	D. J. Count 6969	Shire
801	M. Mariner	Tingley	Victor Morgan 4854	Morgan
803	J. I. Morrison & Co.	Tingley	Capitola 29721	Percheron
340	J. P. Drake	Mount Ayr	Essort (47601) 45473	Percheron
802	M. Mariner	Tingley	Agate 26434	Percheron
800	Tingley Shire Horse Co.	Tingley	Toft Right Stamp 5704	Shire
1183	Claude Bowen	Mount Ayr	Leader 35373	Percheron
1184	Claude Bowen	Mount Ayr	Uncle John 16266	Trotter
1330	H. I. Brent	Diagonal	Fred 30652	Percheron
1319	C. E. Bliss	Diagonal	Mocking Dare 36411	Trotter
1320	C. E. Bliss	Diagonal	Captain Dewey I. 30607	Trotter
1418	M. C. Parr	Maloy	Biron 24813 (44622)	Percheron
1419	M. C. Parr	Maloy	Golden Prince 9806	Clydesdale
1516	L. D. Norry	Redding	Julliard 27525	Percheron
1545	Kellerton Horse Co.	Kellerton	Black Duke 27988	Percheron
1588	Ellston Draft Horse Co.	Ellston	Papillon 27488 (48264)	Percheron
1583	Washington Twp. Horse Co.	Diagonal	Reveur (46169)	Percheron
1701	J. D. Blauer	Tingley	Imperial Duke 11925	French Draft
1724	G. F. Long	Mount Ayr	Marquis Dewey 11047	Clydesdale
2229	D. H. Pike	Diagonal	Becca 47442 (46911)	Percheron
2279	The Kellerton Horse Co.	Kellerton	MacQueen's Model 10603	Clydesdale
2318	Gus Winterschied	Tingley	Baronet Dunbar 10522	Clydesdale
2361	J. & A. W. Michael	Benton	Montague 30682	Percheron
2615	J. H. & C. M. Waugh	Redding	Mack 14465	French Draft
2669	Tingley Percheron Horse Co.	Ellston	Lutin 24452 (44678)	Percheron
2467	D. M. Lane	Diagonal	Morning Star 11925	Percheron

RINGGOLD COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2469	L. A. Duff	Diagonal	Rendelsham Colonial 261 (3174)	Suffolk
2548	Wm. Reasoner	Beaconsfield	Cinturier 31110 (47506)	Percheron
2562	Lotts Creek Percheron Horse Co.	Mount Ayr	Freluquet 32429 (48745)	Percheron
2696	L. D. Norris	Redding	Grueze 45864	Percheron
2797	W. F. Stetzler	Kellerton	Nutseal 38820	Trotter
2951	Kellerton Shire Horse Co.	Kellerton	Moors Commander 6758 (18220)	Shire
1974	W. F. Blackman	Delphos	Daniel Boone 10606	French Draft
3085	W. F. Blackman	Delphos	Alto 28227	Percheron
1615	C. F. Miller	Diagonal	Stuntney Jonadab 6739 (Vol. 24)	Shire
3187	Bliss Bros.	Diagonal	Countness Right Stamp 9044	Shire
3240	Wm. Tapp	Tingley	St. Claire 43148	Percheron
3386	Belgian Horse Co.	Ellston	Bijou de Marchove 1606 (25416)	Belgian
3407	Ellston Standard Bred Trotting Horse Co.	Ellston	Floodwood 39673	Trotter
3536	Z. T. Kinsell	Mount Ayr	Iowa King 8377	Trotter
3699	A. B. Clewel	Mount Ayr	Capulet 16207	French Draft
3764	E. F. Lambert	Tingley	Lambert 50903	Percheron
3763	E. F. Freeman	Tingley	Sheridan 41693	Percheron
3762	E. F. Freeman	Tingley	Potomac 41689	Percheron
3761	E. F. Freeman	Tingley	Merimac 41691	Percheron
3760	E. F. Freeman	Tingley	Carnot 41852	Percheron
1601	John Lahs	Delphos	Hobson 10346	French Draft
4189	E. S. Botleman	Diagonal	Doc Quinn 44252	Trotter
2362	O. N. Perkins	Diagonal	Dewey 10345	French Draft

SAC COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
166	Neal Hoskins	Sac City	Taupin 31611 (48997)	Percheron
775	C. Christiansen	Early	Bolie 8313	Shire
781	Wall Lake Horse Co.	Wall Lake	Joubert De Vynckt 2165 (33306)	Belgian
825	B. F. M. Rose	Auburn	Couquet V. 11073 (14186)	Percheron
829	W. C. Abney	Auburn	Brilliant II 1373	Belgian
874	H. H. Mead	Early	McBurney 23098	Trotter
1066	Odebolt Horse Co	Odebolt	Hector 2005 (30020)	Belgian
1152	Joel Johnson	Wall Lake	Brilliant 23677	Percheron
1180	O. A. C. Horse Co	Odebolt	Colenso de Jandre 1467 (25376)	Belgian
1373	W. C. Abney	Auburn	Chitorney 34369	Trotter
1513	Jerry Bell	Early	Frasier 10812	Clydesdale
1514	W. A. Helsell	Odebolt	Observation 38614	Trotter
1523	W. T. Scott	Early	Cornepic 1144 (17878)	Belgian
1524	W. T. Scott	Early	Rosier 13678 (53863)	Percheron
1582	N. A. Hanken	Sac City	Rosa's Prince 11082	French Draft
1600	Wm. Schade	Odebolt	Prince 23342	Clydesdale
1671	A. P. Jacobsen	Lake View	Warbler 3026 (10716)	Percheron
1715	J. P. Goreham	Odebolt	King of Plainfield 9655 (44547)	Shire
1747	Boyer Valley Horse Co.	Early	Beaumont 31365 (48667)	Percheron
1746	Early Shire Horse Co.	Early	Stenigot Cracksmann 5871 (18376)	Shire
2100	Nemaha Horse Co	Nehama	Moliere 24460 (43666)	Percheron
2117	Ben McMartin	Odebolt	Mobyrne 0764	Trotter
2187	J. P. Wollesen	Lake View	Cristal II 2408 (Vol. 13, p. 932)	Belgian
2188	J. P. Wollesen	Lake View	Ralph II 8776	Shire
2317	Herman Dreessen & Henry Wollenberg	Wall Lake	Gilbert 20416	Percheron
2408	Wm. Hinde	Early	Clipser 9007	Clydesdale
2677	J. J. Toop	Auburn	Jumbo 42656	Percheron
2846	Donald McCorkingdale	Odebolt	Baron of Odebolt 12400	Clydesdale

SAC COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2948	Henry Bowman	Coon Rapids	Brisse 6877 (2057)	French Draft
2966	L. H. Davenport	Odebolt	Keota Cyrus 19470	Percheron
2992	Jos. Mattes	Odebolt	Lofty of Odebolt 10438	Clydesdale
3026	Corsant Bros.	Sac City	Salesbury Conqueror 5384 (17590)	Shire
3038	T. G. Keir	Sac City	Agartam 31233	Percheron
3075	T. W. Down	Odebolt	Colonel D. 11764	Clydesdale
3081	L. C. Pilloud	Sac City	Robroy K. 44916	Percheron
3111	C. E. Stewart	Wall Lake	Morgan Star 32926	Trotter
3177	T. G. Keir	Sac City	Prince Jr. 34959	Trotter
3351	J. J. Toop	Auburn	Fruen 44907	Percheron
3346	John Currie	Odebolt	Roosevelt 6319	Shire
3443	Joe Henaman	Schaller	Le Duc 31434 (45370)	Percheron
3639	J. Kessler	Auburn	Captain Trotter 44577	Trotter
3702	Murphy & Oldnettle	Wall Lake	Beauceron 51233 (62454)	Percheron
3961	L. L. Goreham	Odebolt	Chillingham 45944	Percheron
3962	Odebolt Percheron Horse Co.	Odebolt	Reveur 47065 (63816)	Percheron
3992	W. H. Pettis & S. L. Hawley	Sac City	Baron La Follette 42565	Trotter
4040	G. W. Little	Early	Regolia 15405	French Draft
4309	C. J. Hinkley	Odebolt	Voltigeur 40999 (56177)	Percheron
4330	Donald McCorkindale	Odebolt	Prince of Balloch Roy 13028	Clydesdale
4399	W. C. Abney	Auburn	Togo 49822	Percheron
4434	Chas. Anderson	Sac City	The Illustrator 31800	Trotter
4471	Joshua J. Spicer	Sac City	Bristol II 892	Belgian Draft

SCOTT COUNTY

537	Adolph Muhs	Davenport	Pantheon 25169 (44645)	Percheron
516	W. A. Barr	Davenport	Claudius 212	Oldenburg Coach
875	Henry Schlotfeldt	McCausland	Banquet 6381	Trotter
1323	Kirk Bros.	Davenport	Midnight A. 33409	Trotter
1392	E. T. Smith	Davenport	Baron Patchen 28900	Trotter
1434	The Princeton Percheron Horse Co.	LeClaire	Veilleur 28192 (46864)	Percheron
1496	August Richter	Davenport	Patchen Seal 37941	Trotter
1409	G. A. Smith	Big Rock	Extrador III 6958 (11224)	Percheron
2107	F. Raasch	McCausland	Black Prince 14149	French Draft
944	Princeton Horse Co.	Princeton	Bruno (33784)	Belgian
2239	McCausland Percheron Draft Horse Co	McCausland	Picador 41521 (56945)	Percheron
2256	A. F. Oldenburg	Davenport	Lebelm 41517 (61571)	Percheron
2701	E. T. Smith	Davenport	The Lad 44769	Trotter
3280	McCausland French Coach Horse Co.	McCausland	Telegramme 2400	French Coach

SHELBY COUNTY

4182	C. F. Henderson	Moscow	Colonel 20816	Percheron
737	W. H. Meyer	Corley	W. J. Bryan 2389	French Coach
195	Pleasant Twp. Horse Co.	Shelby	Eperon 34511 (46452)	Percheron
307	Geo. McCamly	Harlan	Davy E. 32886	Trotter
308	T. J. Wyland	Harlan	Bob 29180	Percheron
309	T. J. Wyland	Harlan	Normandy 16673	Percheron
482	Indian Valley Horse Co.	Elkhorn	Organiste D Sartalard 1755 (24424)	Belgian
57	L. C. Donahue	Corley	Dewey 9732	French Draft
77	Douglas Township Belgian Horse Co.	Kirkman	Aconit 1211 (18440)	Belgian

SHELBY COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1061	R. C. Rasmussen	Harlan	Dandy 11151 (22565)	French Draft
1204	C. W. Best	Shelby	Moutonnet 7475	Percheron
1248	Shelby Draft Horse Co.	Shelby	Guignol 26112 (46826)	Percheron
816	Harlan Percheron Horse Co.	Harlan	Logeur 40140 (46372)	Percheron
1283	J. R. Debord	Harlan	Morgan Wilkes 4672	Morgan
1368	W. T. Plummer	Harlan	Tremolo Junior 16590	Percheron
1433	Tennant Horse Co	Tenant	Rangeur 34501 (47518)	Percheron
2585	E. F. Morris	Harlan	Byrondale 42296	Percheron
2865	Defiance Horse Co	Defiance	Ventriloque 34047 (46253)	Percheron
2921	Cass Carter	Harlan	Stuntney Menander 7928 (22824)	Shire
736	Jno. Klinkefus	Irwin	Santa Anne 30971	Percheron
2993	Frank Faltenson	Irwin	Emile 376 (2338)	Belgian
3044	J. A. Kastner	Defiance	Lee Onward 30166	Trotter
3051	C. W. Best	Shelby	Raglan II 8549 (21778)	Shire
3083	L. H. Pickard	Harlan	Capo 31066	Trotter
3238	J. M. Mayer	Defiance	Rosier 26144 (40778)	Percheron
3291	Aaron E. Potter	Irwin	Stand Back 3047 (8306)	Shire
2250	Caus Kenkle	Earling	Happy Boy 50842	Percheron
4034	T. J. & H. O. Wyland	Kirkman	Gringalet 50724 (68210)	Percheron
4238	W. D. Schlensig	Defiance	Bucephalus 49611	Percheron
3676	N. P. Booth	Harlan	Mazzola 41298	Trotter

SIOUX COUNTY

10	H. B. Smith	Ireton	Bob Lockheart 36369	Trotter
1347	Traverse Parker	Ireton	Charnyctzki 23028	Percheron
1428	W. H. Irwin	Ireton	Gros-Loup 10258 (13641)	Percheron
1472	Henry Kokenge	Alton	Strathilson 9427 Vol. XIV	Clydesdale
1620	Gradus Kower	Alton	Rudolph 41321	Percheron
1633	Gerrit Klock	Sioux Center	Involvo Jr. 21642	Percheron
1650	Henry Grotenhuis	Hosper	De Ranger 32670	Trotter
2312	Jacob Minton	Rock Valley	Don Arno 25564	Trotter
233	T. C. Parker	Ireton	Prince Robert 2d 11837	Clydesdale
2440	Peter Hansen	Alton	Babolin 14860 (58372)P	French Draft
2968	P. W. Moir	Orange City	Merveileux 48136 (59205)	Percheron
2970	P. W. Moir	Orange City	Toreador 46269	Percheron
2971	P. W. Moir	Orange City	Sandow 2971	Percheron
2972	P. W. Moir	Orange City	Julien 28951	Percheron
2973	P. W. Moir	Orange City	Gascoigne 29734	Percheron
2974	P. W. Moir	Orange City	Colonel Dickey 38955	Trotter
3250	W. R. Winders	Ireton	Morell 40932	Percheron
3330	John Fanning	Maurice	McMahon 21349	Percheron
3385	Sheridan Belgian Horse Co.	Boyden	Vengeur II 1458 (25418)	Belgian
3511	B. Van der Berg	Sioux Center	Bernice 25462 (43578)	Percheron
3519	Thos. Chew	Hawarden	Bollon 23386 (43267)	Percheron
2170	Nick Hulst	Alton	Celestin 28189 (43772)	Percheron
4008	K. H. DeJong	Orange City	Knockdhu 9716 (10790)	Clydesdale
1109	P. B. Vosberg	Granville	Colonel 14222	French Draft
4100	John Fanning	Maurice	Allards Calypso 45723	Percheron
4249	H. F. Kluender	Granville	Lambert 51873 (60121)	Percheron
4389	E. B. Koppert	Chatsworth	Enorve 16426 (64937)	Percheron
4476	Joe Verdorne Jr.	Rock Valley	Victor 33301	Percheron

STORY COUNTY

64	Thos. Swalwell	Collins	King of the West 10156	Clydesdale
113	H. C. Denniston	Collins	Keota Flanders 33462	Percheron
192	Geo. Connolly	Nevada	Louvrain 2337	French Coach
194	Geo. Connolly	Nevada	Iams' Plunnger 9967 22470	French Draft Percheron
76	Kelley Horse Co.	Kelley	Apres 25057 (44752)	Percheron
79	Maxwell Horse Breeders' Ass'n	Maxwell	Buffalo 23223 (43555)	Percheron
530	T. O. Savim	Roland	Laspaille 28692 (45687)	Percheron

STORY COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
725	J. W. Ogle	Ames	Deacon 45311	Percheron
780	C. W. Scott	Cole	Triboulet 816	Belgian
779	C. W. Scott	Cole	Hobson 41722	Belgian
861	Howard Township Horse Co.	Roland	Seduisant 28161 (45033)	Percheron
988	Zearing Percheron Horse Co.	Zearing	Monopole 13364	French Draft
1326	A. Van Stenberg	Story City	Castor D' Hulste (Vol. XII, p. 861)	Belgian
1376	Oliver Cole	Roland	Big-Joe 35707	Percheron
1377	Oliver Cole	Roland	Keota Bostedo 1377	Percheron
1408	S. B. Frey	Ames	Milford 10590 (25224)	Percheron and French Draft
1407	S. B. Frey	Ames	Montelle 25223 9270	French Draft and Percheron
1406	S. B. Frey	Ames	Jean L 13370	French Draft
1420	Story Percheron Horse Co.	Roland	Vainqueur 30442 (46877)	Percheron
1446	La Fayette Percheron Horse Co.	Gilbert Station	Cacatoes 31128 (45723)	Percheron
1688	M. J. Nelson	Cambridge	Blaisdon Brilliant 7906 (21147)	Shire
1805	H. C. Davis	Ames	Soliman 21281 (43227)	Percheron
2120	J. H. Boyd	Ames	Delamere B. P. 6510 (18671)	Shire
2186	S. J. B. Johnson	Ames	M. Kazek 39781	Trotter
2142	Zearing Belgian Horse Co.	Zearing	Demblon 1152 (13394)	Belgian
2396	N. A. Stimson	Zearing	Alexander 41415	Percheron
2207	C. A. Jerdeman	Story City	Mastodonte 2597 (Vol. 13, p. 292)	Belgian
2640	Iowa State College	Ames	Etradegant 40553 (55321)	Percheron
2641	Iowa State College	Ames	Refiner 12116	Clydesdale
2693	H. C. Davis	Ames	Babe 15358	French Draft
2694	H. C. Davis	Ames	Jolif 46154 (60214)	Percheron
2537	H. C. Lowrey	Nevada	Mazeppa 41840	Percheron
3152	F. C. Gearhart	Ames	Royal 5354	Morgan
3164	Hougen & Co.	McCallsburg	Hercules 27268	Percheron
3261	H. C. Davis	Ames	Nero 47448	Percheron
1432	M. L. Nutty	Nevada	Condor 44607	Percheron
2048	Chas. H. Sawtell	Colo	Aimable 41427 (64642)	Percheron
3613	Fred Holtby & Grant Bates	Collins	Stow Regent 8866 (21915)	Shire
3649	Geo. W. Bull	Zearing	Moulton VI 41981	Percheron
2392	Smalley & Nicks	Gilbert Station	Paulin II (15960)	Belgian
3693	Amos Hanson	Collins	Monarch 16210	French Draft
3695	Robt. L. Neese	Collins	Marquis 41512 (64037)	Percheron
1741	Shaw Bros.	Maxwell	Spartan's Hero 8428	Shire
1185	Geo. Bonde	Story City	Comet 696	French Draft
4022	M. J. Nelson	Cambridge	Royal Victor 42182	Percheron
4073	S. B. Frey	Ames	Moneill 45590	Percheron
4130	F. A. Smith	Nevada	Maraicher 51875 (65504)	Percheron
4212	Samuel Etnier	Colo	Black Hawk 41953	Percheron
4213	Arthur Etnier	Collins	Acorn 42405	Percheron
4214	Arthur Etnier	Collins	Jermiah 44699	Percheron
4258	J. W. Ogle	Ames	Perfection II 46791	Percheron
4037	John H. Hoberland	Zearing	Orange Lad 16688	French Draft
4314	John W. Bloomfield	Maxwell	Clemont 47173	Percheron

TAMA COUNTY

383	J. L. Reedy	Garwin	Wentz 31735	Trotter
147	Geo. Niemand	Traer	Teddy R. 23923	Percheron
133	Jos. E. Axon	Traer	Roan Charlie 11440	Clydesdale
116	W. A. Speer	Buckingham	Timonnier 30406 (52771)	Percheron
232	Jas. Morgan	Traer	Ailsa's Pride 11443	Clydesdale
231	Jas. Morgan	Traer	Prince Archer 11458	Clydesdale
302	Z. T. Moore	Traer	Dewey Day 34091	Trotter
49	Geo. Walz	Tama	Cataline 40918	Percheron
30	Toledo Draft Horse Co.	Toledo	Philibert 40402 (51574)	Percheron

TAMA COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
566	I. D. Magowan	Tama	Lewis Templeman 32809	Trotter
567	I. O. Magowan	Tama	Cedric 7185	Shire
31	Toledo Draft Horse Co.	Toledo	T. H. M. 38691	Trotter
546	Jno. M. Bicket	Traer	Newton Quality 6919	Shire
655	Hildebrand Bros	Gladbrook	Ailsa Again 10374	Clydesdale
698	H. W. Rueppel	Dysart	Rantanglar 6005	French Draft
619	Chas. Vanbel	Dysart	Otter Bank 12310	Clydesdale
728	Traer Percheron Horse Co.	Traer	Introuvable 24765 (46658)	Percheron
1018	Jno. Tiedje	Gladbrook	Roseau 24547 (44327)	Percheron
891	G. J. Monroe	Dysart	Brown Trippe 33669	Trotter
873	Jacob Ulstad	Dysart	Contest Day 43340	Trotter
872	A. R. Wilson	Traer	Judge Lockheart 43416	Trotter
1126	T. A. Green	Toledo	Trappy A. G. 43523	Trotter
1294	J. W. Sackett	Clutier	Black King 20947	Percheron
1295	J. W. Sackett	Clutier	Gilbert 12454	French Draft
1520	J. L. Reedy	Garwin	Silver King 50281	Percheron
1594	Peter Grenewalt	Elberon	Printemps 34022 (51524)	Percheron
1595	Peter Grenewalt	Elberon	Riverside 25580	Percheron
1717	Geo. Filer	Garwin	Allendale 28588	Percheron
1763	Clutier Horse Co.	Clutier	Colin 26156	Percheron
1812	Frank Landt	Gladbrook	Charming Gift 10079 (11006)	Clydesdale
2325	W. H. Sprole	Traer	Deacon 45965	Percheron
2357	Joe Krezek	Clutier	Bayard 20135	Percheron
2405	Jacob Ulstad	Dysart	Vyzantum 37703	Trotter
2406	G. W. Mowers	Dysart	Henry G. M. 37552	Trotter
2409	Geo. Filer	Garwin	Patrique 40790	Percheron
2450	Hildebrand Bros.	Gladbrook	Major Luy 2310 (29320)	Belgian
2898	Henry Voege	Berlin	Bury Valiant 8870 (24107)	Shire
2941	Montour Percheron Horse Co.	Montour	Kabyle 24761 (44167)	Percheron
3069	H. L. M. & N. C. Bruner	Toledo	Frodoard 47115 (61993)	Percheron
3168	Dysart Horse Co.	Dysart	Iphis 20047	Percheron
3193	Percheron Horse Co.	Dysart	Crux 29266 (45146)	Percheron
3198	E. F. Brennen	Dysart	Forfait's Best Son 23338	Percheron
3199	E. F. Brennen	Dysart	Richard 23343	Percheron
3237	J. G. Poshajsky & E. J. Stayaskal	Toledo	Raven Nation 12655	French Draft
3315	Oris Pryne	Elberon	Nicollet 17074	Trotter
2081	Belgian Horse Co.	Dysart	Boulevard 2284 (33706)	Belgian
3540	Wm. F. Nation	Buckingham	Timonnier Jr. 15621	French Draft
3556	John F. Johnson	Chelsea	Invador 41729	Trotter
3227	Nettie Goodwin	Tama	Sam T. 41407	Trotter
3934	J. D. Filloon	Toledo	Severn Melton 8931 (23693)	Shire
3964	Wm. Struve	Elberon	Fidol Chief 30331	Trotter
4140	Otto Kleppein	Clutier	Javelot 51432 (58875)	Percheron
4123	James Morgan	Traer	Prophet 13167	Clydesdale
4122	James Morgan	Traer	Tama Jim 12225	Clydesdale
4121	James Morgan	Traer	Prince Henry 10645	Clydesdale
1867	Chas. Luthje	Garwin	The Baron VII (23930)	Shire
4238	J. C. Bradley	Garwin	Alvechurch Heirloom 9618 (23950)	Shire
721	O. H. Morford	Chelsea	Congo (21578)	Belgian
4420	A. R. Fox	Elberon	Raven 53033	Percheron
4421	A. R. Fox	Elberon	Pompey 42383	Percheron
4430	J. W. Manatt	Chelsea	Porthos X 861	Belgian
4431	J. W. Manatt	Chelsea	Prince 1025	Belgian

TAYLOR COUNTY

377	Frank Stanley	Gravity	Compeer 9649	Clydesdale
376	W. H. Pfander	Sharpsburg	Lucky Lad 40471	Percheron
365	E. T. Philpott	Sharpsburg	Bedford 25620 (19170)	Percheron

TAYLOR COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
349	J. S. Hanshaw	Bedford	Brilliant 28679	Percheron
345	G. W. Page	Lenox	Chasseur 32831 (46217)	Percheron
344	G. W. Page	Lenox	Mingo Chief 0666	Trotter
305	E. W. Hardenbrook	Bedford	Herschel Rysdyke 31325	Trotter
325	J. S. Stimson	Gravity	Huxwood 38735	Trotter
306	Jno. Curphey	Lenox	Iroquois 34600	Percheron
356	W. H. Payton	Bedford	Soudeur 28688 (25700)	Percheron
464	Thos. McClintock	Lenox	Sultan 33195	Percheron
519	Grove Township Horse Co.	Lenox	Lime Kiln Tom 7595 (21599)	Shire
33	Newton Rhoades	Lenox	Ernst 41867 (57131)	Percheron
20	Warren O'Dell	Gravity	Ottoman Chief Jr. 34343	Trotter
492	Dr. Wm. Readhead	Lenox	Ax Dowell 40369	Trotter
491	Dr. Wm. Readhead	Lenox	Exbird 39999	Trotter
586	J. J. Knox	Clearfield	General Scott 30497	Percheron
584	G. D. Hazen	Bedford	King of All 30169	Percheron
427	Charles Bean	New Market	Denain 32428 (47543)	Percheron
683	J. M. Long	Lenox	Antrione 43073	Trotter
613	G. D. Bix	Bedford	Gabels Black Prince 5751	Shire
745	State Road Horse Co.	Bedford	Langton Napoleon 5749 (18140)	Shire
750	Clark Armstrong	Lenox	King Purquois 45053	Percheron
749	Clark Armstrong	Lenox	Bob Orr 25424	Trotter
760	W. W. Kirby	Gravity	Major Genese 1250 (18802)	Belgian
808	The Morning Star Percheron Horse Co.	Bedford	Rudolph 17323	Percheron
852	Wise, Ray, Miller Horse Co.	New Market	Picador 27854 (46930)	Percheron
850	John Curphey	Lenox	Sir Clinton 45309	Percheron
844	E. T. Philpott	Sharpsburg	Comet II 40520	Percheron
846	E. T. Philpott	Sharpsburg	Lamont 40607	Percheron
848	E. T. Philpott	Sharpsburg	Laureat 32670 (46176)	Percheron
1086	Pierce Wheeler	Gravity	Keota Captor 21661	Percheron
1097	J. A. Hamilton	Bedford	Lord Bancroft 7040	Shire
1006	Phil Slattery	Lenox	Kid McCloy 9228	Clydesdale
993	S. A. Dowell	Conway	Lafleur De Wortghem (33292)	Belgian
1192	Gravity Draft Horse Co.	Gravity	Bonneval 25437 (45405)	Percheron
1247	Clearfield Horse Improvement Co	Clearfield	Samory 26551 (43742)	Percheron
1273	J. T. Dunlap	Lenox	Baron Lockhart 9699 (10685)	Clydesdale
1356	E. M. Patton	Clearfield	Chestnut Sprague 35366	Trotter
1338	A. D. Robey	Conway	Sir Hugo 6378 (20028)	Shire
1375	C. H. Chamberlain	Bedford	Humbert de Pomm 2052 (23192)	Belgian
1431	J. A. Hamilton	Bedford	Gold-Dust 50237	Percheron
1487	E. E. Leighton	New Market	Lee-Dallas 50239	Percheron
1534	W. P. Oliver	Lenox	Girton Tom 6390	Shire
1669	Harry Allen	Hopkins, Mo.	Earl of Dunbar 10631	Clydesdale
1719	S. E. Robinson	Conway	Fanfulla 2238 (32794)	Belgian
1761	E. T. Philpott & Co.	Sharpsburg	Fauntleroy 41237	Percheron
1839	H. N. Ray	Ladoga	Teddy 15097	French Draft
1838	H. N. Ray	Ladoga	Blain 15098	French Draft
2130	Blockton Percheron Horse Co.	Blockton	Joubert 25816	Percheron
2150	Blockton Horse Co.	Blockton	Jupiter 10848 (921)	French Draft
2285	S. & W. W. Hartzler	Bedford	De Leon 42043	Percheron
2299	Dr. O. T. West	Conway	Homere 42597	Trotter
2499	J. D. Barrans	Clearfield	Stuntney Expectant 5374	Shire
2472	Herbert Peak	Lenox	Norvent Boy 39707	Trotter
2726	M. M. Spurgeon	Bedford	Accorte 14854 (59933)P	French Draft
2772	J. E. Anderson	Conway	Hercule II 920	Belgian
2773	J. E. Anderson	Conway	Joseph 42238	Percheron

TAYLOR COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2771	J. E. Anderson	Conway	Conway Sully 42240	Percheron
2843	Fine Bros.	New Market	Prime Minister 5166	Shire
2308	E. E. Leighton	New Market	Maxime 50658 (59942)	Percheron
2862	Powell & De Haven	Conway	Brave 13679 (60443)P	French Draft
2939	J. N. Nichols	Clearfield	Captain Jinks 11103	French Draft
3124	W. H. Payton	Bedford	Perfection 44731	Percheron
3125	W. H. Payton	Bedford	Pink Paragon 43929	Percheron
2131	W. H. Price	Gravity	Jupiter Jr. 15031	French Draft
1385	W. H. Robinson	Bedford	Banker 50290	Percheron
3403	H. Davidson	New Market	Major 6577	Shire
3461	S. N. Bristown	Bedford	Victor 44734	Percheron
3482	H. M. Long	Bedford	Favorite Herschel 45441	Trotter
3633	J. E. Barkhurst	Clearfield	Botha de Leoten (33020)	Belgian Percheron
3849	E. E. Leighton	New Market	Black Boulder 50252	Percheron
3861	E. T. Philpott	Sharpsburg	Laurent 33171	Percheron
3860	E. T. Philpott	Sharpsburg	Banker 51538	Percheron
3859	E. T. Philpott	Sharpsburg	Royal Boy 51055	Percheron
1680	E. T. Philpott	Sharpsburg	Leduc 23313	Percheron
343	Clarke Grace	Bedford	Castellan 40144 (52911)	Percheron
3933	C. B. Atkin	Lenox	MacCloy Jr. 9218	Clydesdale
4055	W. H. Robinson	Bedford	Geron 2846 (41868)	Belgian
4223	J. A. Hamilton	Bedford	Baro 2843 (41866)	Belgian
4197	Wm. Redhead	Lenox	Colonel McDowell 44536	Trotter
4170	Elmer Crum	Blockton	William McKinley 30215	Percheron
4294	J. J. Mercer	Lenox	Lieutenant 25544	Percheron
4293	J. J. Mercer	Lenox	Mokrani 29835	Percheron
4325	H. M. Long	Bedford	James 51101 (67494)	Percheron
4327	E. E. Leighton	New Market	Lucky Strike 50240	Percheron
4363	J. P. Lininger	Lenox	Dexter 16622	French Draft
350	Churchill & Dougherty	Bedford	Tatton Navigator 6990 (19170)	Shire
4439	J. M. Long	Lenox	Garnetwood 47852	Trotter
4445	E. T. Philpott	Sharpsburg	Blande II 41661	Percheron
4446	E. T. Philpott	Sharpsburg	French Monarch 16980	French Draft
4447	E. T. Philpott	Sharpsburg	Success 41708	Percheron
4448	E. T. Philpott	Sharpsburg	Gay Lad 41663	Percheron
4449	E. T. Philpott	Sharpsburg	Orphan Boy 42849	Percheron
4450	E. T. Philpott	Sharpsburg	Theodore 42490	Percheron
4451	E. T. Philpott	Sharpsburg	Sargent 35369	Percheron
4452	E. T. Philpott	Sharpsburg	Coco 51614	Percheron
4453	E. T. Philpott	Sharpsburg	Black Percheron 51201	Percheron
4454	E. T. Philpott	Sharpsburg	Sargeant 50690	Percheron
4455	E. T. Philpott	Sharpsburg	Success 50705	Percheron
4456	E. T. Philpott	Sharpsburg	Bedford 42319	Percheron
4457	E. T. Philpott	Sharpsburg	Black Joe 50691	Percheron
4458	E. T. Philpott	Sharpsburg	Jean Le Blanc 41706	Percheron
4459	E. T. Philpott	Sharpsburg	Teddie Boy 51579	Percheron
4460	E. T. Philpott	Sharpsburg	Blande II 51613	Percheron
4461	E. T. Philpott	Sharpsburg	Brilliant 42538	Percheron
4462	E. T. Philpott	Sharpsburg	Stuntney Prince 9690	Shire
4463	E. T. Philpott	Sharpsburg	Sharpsburg Warrior 9077	Shire
4284	N. Herrigan	Conway	Counsellor 4999	Morgan

UNION COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
569	R. C. Holland	Afton	Judge Towner 19419	Trotter
61	Taylor Kilgore	Cromwell	Mongol 42230 (52132)	Percheron
40	R. J. Ross	Cromwell	Creston Royal 4942	Shire
568	A. E. Otis	Afton	Bijou 10839	French Draft
709	A. Latimer Wilson	Creston	Villebon 10529 (14471)	Percheron
710	F. L. Streams	Creston	Plainview Dignity II 6389	Shire
611	C. N. Paulson	Lorimor	Coco 22406	Percheron
610	C. N. Paulson	Lorimor	Gentleman Joe 6181	Shire
416	C. G. Webb	Afton	Lethbridge 7713	Shire
753	Sadler & Brown Bros.	Creston	Souverain 41195 (52467)	Percheron
762	W. R. Henderson	Afton	Moscow 25509 (42605)	Percheron

UNION COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
799	T. A. Stevenson	Shannon City	Iowa Champion 7286	Shire
856	G. E. Reetz	Cromwell	Redea 4557	Morgan
805	D. J. Gibbons	Cromwell	Ravenwood 8339	Shire
806	D. J. Gibbons	Cromwell	Gibbons Charger 6968	Shire
1053	W. J. Stalcup	Lorimor	Romulus 44892	Percheron
1044	G. W. Stream	Spaulding	Prince of Wales 6725	Shire
1140	S. J. Bayles	Cromwell	Slasher 40401	Percheron
1139	S. J. Bayles	Cromwell	Banker II 7635	Shire
1260	B. E. Carter	Creston	Grayson 19436	Trotter
1340	E. Fugier	Creston	Senator 41137	Percheron
1341	E. Fugier	Creston	Percheron Chief 41106	Percheron
1342	E. Fugier	Creston	Chestnut Baron 8108	Shire
1343	E. Fugier	Creston	Hakes' Prince 5854 (18778)	Shire
804	M. Iams & Co.	Lorimor	Medley Rex 37790	Trotter
1605	C. L. Waltz	Spaulding	Stuntney Airlie 8022 (22965)	Shire
1621	G. L. Reed	Kent	Sultan 45435 (48324)	Percheron
1635	C. D. Riggs	Spaulding	Iowa Prince 4841	Morgan
1703	H. Y. Lupher	Lorimor	Prince Albert II 13861	French Draft
1766	G. W. Stream	Spaulding	Modock 41236	Percheron
1798	Grant Hubble	Kent	Lofty Yet 9945	Clydesdale
326	McKinnie Bros.	Afton	Bluffer 29717	Percheron
2027	F. L. Stream	Creston	Lucky Lad 8182	Shire
2320	W. R. Wilson	Arispe	Duke of Marlborough 19540	Percheron
1856	H. H. Jeter	Thayer	Boileau 50422 (60614)	Belgian
2484	G. W. Bilbo	Creston	Colonel Beaumont 7998	Shire
2655	M. E. Thompson	Afton	Custerwood 43445	Trotter
2671	A. T. Worsley & Sons	Kent	Valerien 47985 (58032)	Percheron
2473	J. H. Garrels	Thayer	Lemaire 860	French Coach
2570	Shannon City Percheron Horse Co.	Shannon City	Otta 40387	Percheron
2712	Creston Shire Horse Co.	Creston	Plain View Dignity 5550	Shire
2754	A. L. Wilson	Creston	Edward VII 6931 (Vol. 25)	Shire
1052	L. L. Stoner	Afton	Maroc 14130	French Draft
555	David Miller	Spaulding	Bon Ami 4630	Shire
2861	J. J. Thompson	Afton	Greenwood 28150	Trotter
2911	J. H. Garrels	Thayer	Preval 14185	Percheron
2909	Ed Hupp	Afton	Calvin 11535 (20017)	Percheron
2928	E. F. & F. L. Sullivan	Afton	Trumans Surprise 7342	Shire
2953	G. W. Bilbo	Creston	Keck 6575	Shire
2952	G. W. Bilbo	Creston	Crown Prince 8000	Shire
2960	L. M. Cherrington	Creston	Prime 2415 (36859)	Belgian
2989	F. L. Stream	Creston	Sport 13731	French Draft
3128	Gale McCall	Lorimor	Major D' Ob 2531 (Vol. 8, p. 480)	Belgian
3157	G. S. Reetz	Cromwell	Sostene 50865 (62597)	Percheron
3333	A. Latimer Wilson	Creston	Bedwell Marquis 8326 (22101)	Shire
3348	Stream & Wilson	Creston	Frimas 50957 (61646)	Percheron
3411	Frank A. Ide	Creston	Monteith 31604	Percheron
3412	Frank A. Ide	Creston	Boulder 46527	Percheron
3413	Frank A. Ide	Creston	Major 46526	Percheron
3414	S. H. Wright	Afton	Linton Executor 5654 (17449)	Shire
3497	Geo. W. Bilbo	Creston	Roy Hazelton 9064	Shire
3498	Geo. W. Bilbo	Creston	Banker Boy 9066	Shire
3499	Geo. W. Bilbo	Creston	Cap Vincent 9065	Shire
3500	Geo. W. Bilbo	Creston	Rex Beaumont 9063	Shire
3599	D. J. Gibbons	Cromwell	Irvington 8857	Shire
3628	Geo. W. Bilbo	Creston	Hugh Roderic 49519	Percheron
3629	C. G. Webb	Afton	Coal Brilliant 49520	Percheron
3686	B. Whitworth	Afton	Brilliant's Model 22404	Percheron
3768	Frank L. Stream	Creston	Pimpant 51370 (66729)	Percheron
3890	John Kilgore	Cromwell	Diavolo 51372 (65407)	Percheron
3931	Geo. W. Bilbo	Creston	Vallor 50284	Percheron

UNION COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3932	Geo. W. Bilbo	Creston	Dick Ryan 50266	Percheron
3933	Geo. W. Bilbo	Creston	Conquor 50270	Percheron
3957	Frank A. Ide	Creston	Theodore 49709	Percheron
3993	H. C. Schroder	Creston	Black Diamond 48619	Percheron
4023	G. W. Stream	Creston	Butor 42543 (62561)	Percheron
386	J. P. Cromwell	Shannon City	J. W. 11125	French Draft
4047	Geo. W. Bilbo	Creston	Black Jack 40869	Percheron
4048	Geo. W. Bilbo	Creston	Prosper 48070	Percheron
4049	Geo. W. Bilbo	Creston	Logan 50280	Percheron
4050	Geo. W. Bilbo	Creston	Major 52501	Percheron
4051	Geo. W. Bilbo	Creston	Monarch 50278	Percheron
4052	Geo. W. Bilbo	Creston	Pagoda 50276	Percheron
4111	W. M. Smith	Thayer	Lime Light 44106	Trotter
4144	G. W. Welling	Afton	Carnegie 32686	Percheron
4204	Loubet Horse Co.	Thayer	Loubet 28140 (45686)	Percheron
4199	W. R. Wilson	Arispe	Sideram 42563 (65319)	Percheron
4195	H. P. Bagg	Afton	Greenwood, Jr. 43439	Trotter
4184	G. W. Welling	Afton	Bicot 54380 (66825)	Percheron
4183	A. Latimer Wilson	Creston	Inval 2847 (41890)	Belgian
4250	L. M. Cherrington	Creston	Mayeur 2849 (37210)	Belgian
4251	Wm. Downs	Creston	Aiglon 2841 (41858)	Belgian
4287	Geo. W. Bilbo	Creston	Hugh Vincent 9737	Shire
1005	Geo. W. Bilbo	Creston	Doctor Lad 26340	Percheron
4304	D. J. Gibbons	Cromwell	Bamboo's Wonder 9719	Shire
4362	Geo. W. Bilbo	Creston	Hugh Bennett 50269	Percheron
4394	C. W. Harkness	Creston	Tions Bon 2474	French Coach
4397	A. Latimer Wilson	Creston	Bouncer 9561	Shire
4398	A. Latimer Wilson	Creston	Royal Paxton 9743 (25592)	Shire
670	J. H. Garrels	Thayer	Becket May Prince 6857 (17149)	Shire
4473	August Reetz	Cromwell	LaRose 54387 (67502)	Percheron

VAN BUREN COUNTY

457	J. V. Clark	Birmingham	Blyth Farmers Lad 5389 (16003)	Shire
458	J. V. Clark	Birmingham	Rudolf 70 (1246)	Oldenburg Coach
114	T. L. Simmons & Son	Bonaparte	Esnault 34769	Percheron
155	A. A. Bonner	Keosauqua	Jamais 25583 (43815)	Percheron
197	E. E. Keck	Stockport	Roseau 25586 (44296) 12994	French Draft and Percheron
256	Jas. W. Rhynas	Stockport	Pepin 35100 (52938)	Percheron
479	Wm. Bishop	Milton	Marquis III 33769	Percheron
435	J. H. Stull	Birmingham	Keota-Sawyer 33440	Percheron
792	J. W. Warner	Bentonsport	Mud Creek Bill 10274	Clydesdale
813	J. V. Clark	Birmingham	Masher 8390	Shire
823	S. B. & L. C. Carroll	Selma	Keota-Blaurock 24823	Percheron
824	J. H. Zeitler	Douds-Leando	Chequest Hero 44256	Percheron
1161	L. S. Pickett	Cantril	Cherbourg 25581 (44507)	Percheron
1160	L. S. Pickett	Cantril	Volcan 642 (4052)	Belgian
1468	W. D. Thomas	Douds-Leando	Chanteur 1918 (32820)	Belgian
1469	W. D. Thomas	Douds-Leando	Radis (48708)	Percheron
154	R. C. Harris	Stockport	Plato 44975	Percheron
171½	F. M. Smith	Stockport	Champ 11570	Clydesdale
1713	F. M. Smith	Stockport	Stockport Dewey 23673	Percheron
1790	T. R. Robertson	Farmington	Chopin 44113 (57667)	Percheron
1210	J. E. McKeehan	Farmington	Chief Coburn 6982	Shire
2111	L. K. Doud	Douds-Leando	Panama 41618	Percheron
2329	P. D. Holloway	Milton	Omar C. 42168	Trotter
2395	A. J. Leffler	Stockport	Master Fearless 9484	Clydesdale
2453	R. E. Meek	Bonaparte	Mellier 9993	French Draft
2529	E. D. Prunty	Farmington	Kale 8591	Clydesdale
2530	E. D. Prunty	Farmington	Quenny 24816 (44496)	Percheron
2531	State Line Coach Horse Co.	Farmington	Rallien 2480	French Coach
2835	V. F. Newell	Birmingham	Brilliant 15192	French Draft
2836	V. F. Newell	Birmingham	Triton 15195	French Draft

VAN BUREN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2852	Birmingham Draft Horse Co.	Birmingham	Favori II 45574	Percheron
2959	A. F. Haney	Milton	Fernaux 14878	French Draft
2958	A. F. Haney	Milton	Ike Squirrel 1888	Saddle Horse
3328	M. S. Bonar	Milton	Wayside Chief 8586	Clydesdale
3379	Morris, Newman & Morris	Stockport	King Dover 48394	Percheron
1108	Morris, Newman & Morris	Stockport	Collard 35004	Percheron
3438	A. M. Brady	Milton	Nectur 45576 (64248)	Percheron
3537	S. F. Henry	Bonaparte	Victor 7448	Shire
3546	E. C. Holland, W. H. Craven & W. H. Atkins	Milton	Onatas 13267	French Draft
3560	Harrisburg Percheron Horse Co.	Stockport	Citoyen 40277 (45928)	Percheron
3561	Harrisburg Percheron Horse Co.	Stockport	Imprint Jr. 33548	Trotter
3574	John W. Warner	Bentonsport	Pat Crown 43203	Trotter
3609	S. C. Kerr	Keosauqua	Benson Prince 15435	French Draft
3610	S. C. Kerr	Keosauqua	Triton 15429	French Draft
3607	Fisher & Guy	Cantril	Picador 44121 (60211)	Percheron
3742	Donald & Edwards	Stockport	Prince Goodwin 8931	Clydesdale
3954	B. M. Boyer	Farmington	King Edward IV 6121	Shire
4066	W. C. Strait	Keosauqua	Lochinvar 45346	Percheron
4067	W. C. Strait	Keosauqua	Brilliantine 44255	Percheron
196	J. H. Keck	Stockport	Chartroose 7803 33721	French Draft and Percheron
4262	T. L. Simmons	Bonaparte	Co Co 50603	Percheron

WAPELLO COUNTY

289	Jay Bros.	Blakesburg	Facteur 27139 (46785)	Percheron
288	Jay Bros.	Blakesburg	Belleau 24553 (43513)	Percheron
84	O. S. Miller	Blakesburg	Waldo 901	Belgian
605	P. E. Leinhauser	Ottumwa	Marx 21919	Percheron
604	P. E. Leinhauser	Ottumwa	Senator Ballingall 31895	Trotter
603	P. E. Leinhauser	Ottumwa	Ouse Wonder 7944	Shire
796	Jas. A. Miller	Agency	Asseurus 12860	French Draft
976	L. C. Hendershot	Ottumwa	Red Allerio 45423	Trotter
1271	J. H. Kepler	Kirkville	Transvaal 23199 (44612)	Percheron
1822	W. S. Maurice	Ottumwa	Cyprien 28736 (48448)	Percheron
2260	T. F. & W. C. Gonterman	Eldon	Uruguay (48765) 48009	Percheron
1722	W. S. Maurice	Ottumwa	John 32039	Percheron
1574	Village Creek Horse Co.	Ottumwa	Captor 12027 (12078)	Clydesdale
2816	C. E. Moore	Eddyville	Keota Standard 27698	Percheron
2947	E. M. Holmes	Eddyville	Brilliant 50218 (59668)	Percheron
3123	H. Woods	Eldon	Onslow 41973	Trotter
3382	A. J. Black	Blakesburg	Black Chief 41955	Percheron
3470	Blair and Jackson	Ottumwa	Mac Lilly 9071	Clydesdale
3493	A. D. & Carl F. Krueger	Ottumwa	King of Perche 34712	Percheron
3494	A. D. & Carl F. Krueger	Ottumwa	Pellico 24287	Percheron
3495	A. D. & Carl F. Krueger	Ottumwa	Shadeland Athelete 29695	Trotter
3496	A. D. & Carl F. Krueger	Ottumwa	Anchor Lockheart 33162	Trotter
3508	Roy Gosney	Ottumwa	Wapello Chief 13113	Clydesdale
3530	A. D. & Carl F. Krueger	Ottumwa	Xevier 29650	Trotter
3531	A. D. & Carl F. Krueger	Ottumwa	Judge Crisman 33161	Trotter
3532	A. D. & Carl F. Krueger	Ottumwa	Captain K. 42412	Trotter
3692	Chas. Peterson, F. A. Gustafson & W. L. Johnson	Dudley	Duke of Scotland 12631	Clydesdale
4165	Leroy E. Fite	Eldon	Co Co 16845	French Draft

WAPELLO COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4164	Leroy E. Fite	Eldon	Mignon 14390	French Draft
4255	P. E. Leinhauser	Ottumwa	Bon Lusty 6600 (17375)	Shire
4263	Geo. Lentner	Ottumwa	Keota James 9514	Shire
4264	Geo. Lentner	Ottumwa	Keota Calix 44792	Percheron

WARREN COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
245	W. O. Romine & W. J. Shigley	New Virginia	Beaumont Standard 6080 (11758)	Shire
16	Oscar Hunt	Carlisle	Le Blanco II 12431	French Draft
22	J. A. Mason	Carlisle	Blue Rex 39786	Trotter
8	F. W. Smith	Winterset	Aeritonian 32506	Trotter
552	E. F. Keeney	Carlisle	Fuschia 25181 (43795)	Percheron
521	H. E. Hopper	Indianola	Marengo 41408	Percheron
475	J. H. Simmerman	Indianola	Arthur 10059	French Draft
704	Henry Horse Co.	Carlisle	Romeo 29519 (44986)	Percheron
421	Alexander & Wheeler	Prole	Penneloz 54568	Percheron
975	St. Mary's Percheron Horse Co.	St. Marys	Ecclier 33959 (48753)	Percheron
1077	Taggart & Son	New Virginia	Illinois II 5536	Shire
1076	Taggart & Son	New Virginia	Keota-Carnot 1469	French Coach
1075	Taggart & Son	New Virginia	Waterloo 50212	Percheron
1069	C. E. Read	New Virginia	Edward VII 6931	Shire
1033	Chris. Schuldt	Norwalk	Port Drapeau 1066 (21590)	Belgian
1259	J. H. Barnett & Son	Indianola	Teddy 34678	Percheron
1258	J. H. Barnett & Son	Indianola	What You Like 29161	Percheron
1291	H. B. Flesher	Liberty Center	Brilliant 10289 6427	Percheron
1290	H. B. Flesher	Liberty Center		French Draft
1289	H. B. Flesher	Liberty Center	Solide 21454 (43346)	Percheron
1288	H. B. Flesher	Liberty Center	Lenain 3966	Shire
1300	P. D. Mason	Lacona	Sampson 34732	Percheron
1301	Warren County Horse Co.	Indianola	Banker 6782	Shire
1302	Warren County Horse Co.	Indianola	Avalanch 10026	French Draft
1459	H. E. Hopper	Indianola	Admiral 24504 (44658)	Percheron
1440	F. O. Nutting & Son	Indianola	Africander (Vol. 23)	Shire
1441	F. O. Nutting & Son	Indianola	Rex 41887	Percheron
1442	F. O. Nutting & Son	Indianola	Gladitor's Pride 43873	Percheron
1444	F. O. Nutting & Son	Indianola	Black Dandy 40772	Percheron
1652	J. H. Barnett & Son	Indianola	Dewey's Image 43150	Percheron
1653	J. H. Barnett & Son	Indianola	Simpson Boy 34681	Percheron
1443	I. W. Thomas	Norwalk	Brilliant 45630	Percheron
2089	T. G. McCoy	Indianola	Coco 35856	Percheron
2091	T. G. McCoy	Indianola	Admiral Togo 43076	Percheron
2147	H. E. Hopper	Indianola	Kenwood Chief 34680	Percheron
2148	H. E. Hopper	Indianola	Better Yet 43995	Trotter
2501	W. T. Sinnard	Carlisle	Perfectum 44143	Trotter
2611	E. T. Keeney	Carlisle	Keota-Burnett 33461	Percheron
2532	Taggart & Son	New Virginia	Black Joe 35854	Percheron
2533	Taggart & Son	New Virginia	Joe. Bailey II 8393	Shire
2563	P. H. Hester	Indianola	Kruger 26314	Percheron
			Robert Terton 37182	Trotter
1662	Churchville Horse Co.	Churchville	Mirliton 2258 (Vol. 12)	Belgian
1794	Cumming Horse Co.	Cumming	Androcles 41274 (59473)	Percheron
2832	Social Plains Horse Co.	Indianola	Grincheur 2832	Percheron
2834	W. I. Shetterly	St. Charles	Napoleon 15565	French Draft
3037	E. M. Lewis	Norwalk	Joe Cedric 40861	Trotter
3172	L. C. Barnett & Co.	Indianola	General 43077	Percheron

WARREN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3173	L. C. Barnett & Co.	Indianola	Admiral Jr. 48129	Percheron
3174	L. C. Barnett & Co.	Indianola	Lad 48130	Percheron
3175	L. C. Barnett & Co.	Indianola	French Lad 15717	French Draft
3279	Read Bros.	New Virginia	Stuntney Benedict 8893 (23741)	Shire
3318	J. P. Wilson	Indianola	Caesar 45539	Percheron
1439	John Summerman	Indianola	Gladiator II 32148	Percheron
3345	A. E. Vansyoc	Milo	Bulger 10033	French Draft
3408	J. A. Mason	Carlisle	Duroc Rex 45351	Trotter
3471	A. DeMoss	Spring Hill	Romeo de Bernissem 2053 (27248)	Belgian
3619	James Mulvihill	Cumming	Vaneau 31435 (46653)	Percheron
3620	James Mulvihill	Cumming	Malicieux 30592 (48759)	Percheron
3627	J. F. Wright	Milo	Diamond Dick 3598	Shetland Pony
2502	Elmer Keeney	Lacona	Barondon Blaze 6450 (15973)	Shire
699	W. J. Wilson	Lacona	Questeur 10149	French Draft
3641	E. D. Spencer	Milo	Milo Boy 45455	Trotter
3669	Marshall & Hanby	Summerset	Agencol 16101	French Draft
3260	S. W. Weeks	Indianola	Damocles 28436 (44960)	Percheron
3750	Don L. Berry	Indianola	Josef 46800	Percheron
3900	H. B. Flesher	Liberty Center	Cedar Clay 45434	Percheron
3966	Adam Stamm	Carlisle	Bonpays 50800 (64190)	Percheron
3295	F. L. Kessler	Lacona	Otto 46096	Percheron
4098	W. J. Wilson	Liberty Center	Waxham Lad 7150 (19227)	Shire
4104	L. L. Harvey	Lacona	Norwood Echo 49329	Percheron
4147	J. F. Gibbs	Lacona	Joe 49333	Percheron
4135	W. J. Wilson	Liberty Center	Igniter 5191	Shetland Pony
3696	S. W. Weeks	Indianola	The Arch Duke 2569 (8396)	Shire
4321	Ora Conrad	New Virginia	Chief 13617	French Draft
4326	F. H. Slack	Hartford	Dexter 15650	French Draft
3656	Ned E. Spurgeon	Ackworth	Groom 7342-11981 (22315)	Percheron and French Draft
4148	J. E. Riggs	Lacona	Proud Brilliant 49334	Percheron
2985	S. W. Weeks	Indianola	Brisefer 28432 (45431)	Percheron

WASHINGTON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
198	M. M. Kempf	Kalona	Norm 13155	French Draft
222	W. R. Bonham	Kalona	Why Not II 7186 (21027)	Shire
1059	J. E. Elgar	Noble	Little Plumb 40087	Trotter
1058	J. E. Elgar	Noble	Big Cinnamen 39090	Trotter
1047	E. M. Smith	Crawfordsville	Orageux 26110 (44842)	Percheron
1111	W. C. White	Ainsworth	Mithridate 20535 (35918)	Percheron
1113	W. C. White	Ainsworth	Albert Sidney Johnston 42345	Percheron
1159	Chapel Bros.	Ainsworth	Kadour 24767 (46672)	Percheron
1158	Chapel Bros.	Ainsworth	Frenchman 499	French Draft
1157	Chapel Bros.	Ainsworth	General Washington 1475	Saddle Horse
1327	A. P. Hayes	Washington	Ganzoo 17645	Trotter
1495	C. C. Erude	Wellman	Keota Arthur 5796	Shire
1806	The Egypt Horse Co.	Washington	Parfait 40031 (42295)	Percheron
1993	B. J. Shetler	Kalona	Kalona Boy 38259	Trotter
2006	C. E. Hershberger	Wellman	Young Rapin 14543	French Draft
2035	Leichty & Conrad	Noble	Guerrero 46188 (60811)	Percheron
2036	Leichty & Conrad	Noble	Prince John II 6137 (19032)	Shire
2092	R. H. Leeper	Noble	Eugene 41566	Percheron
2093	R. H. Leeper	Noble	Strubby Fear None 7573 (20935)	Shire
2094	R. H. Leeper	Noble	Congolias 1921 (29634)	Belgian
2210	J. B. Spencer	Ainsworth	Satisfait 46048 (63380)	Percheron
2417	C. J. Winter	Washington	Ardent 46151 (58821)	Percheron
2512	T. E. Johnson	Washington	Lavron 28466	Trotter

WASHINGTON COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2525	B. J. Oyer	Noble	Prince Monarch 40629	Percheron
2632	D. Rittenhouse & Son	Washington	Marcellus 46075	Percheron
2656	E. E. Norman	Wellman	Roy N. 43477	Trotter
2590	E. E. Embe & Chas. Gabriel	Wellman	Keota-Jacob 7789	Shire
2591	E. E. Embe & Chas. Gabriel	Wellman	Keota-Sargent 8270	Shire
2728	C. J. Winter	Washington	Lake Lancer 8785 (20622)	Shire
2737	J. C. Swift	Washington	Dandy Dan 21508	Trotter
2874	V. F. Schnoebelen	Riverside	Keota-Pansey 4972	Shire
2917	Wentworth & McClelland	Brighton	All Here 9248	French Draft
1918	Wentworth & McClelland	Brighton	Waldo 13323	French Draft
2919	Wentworth & McClelland	Brighton	Gabels' Champion 6132 (18028)	Shire
2920	Wentworth & McClelland	Brighton	Rodomont 22624 (34006)	Percheron
3119	E. D. Herchberger	Kalona	King 14456	French Draft
3418	D. J. & D. M. Palmer	Washington	Truant's Premier 21530	Percheron
3580	J. W. Justice	Kalona	Ed Aegon 45139	Trotter
3745	D. Rittenhouse	Washington	Prince of Lakewood 21528	Percheron
3929	H. D. Hazlett	Ainsworth	Red Rob 44135	Trotter
1112	C. S. Fletcher	Crawfordsville	Black Prince 4207	Shire
1110	Henry Lefler	Ainsworth	Conrad 33890	Trotter
4030	W. C. White	Ainsworth	Hercules 15972	French Draft
4151	J. W. Glancy	Crawfordsville	Glaneur 22711 (43051)	Percheron
4391	Turbott & Morrison	Ainsworth	Ainsworth Lad 47898	Trotter
4392	Turbott & Morrison	Ainsworth	Keota Albert 49054	Percheron

WAYNE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
441	A. F. Place	Humeston	Mambrino Kirkwood 30703	Trotter
500	T. A. Toliver	Clio	Ralph 6323	Shire
442	A. F. Place	Humeston	Columbus 11096	French Draft
443	A. F. Place	Humeston	Spark IV 7147 (19136)	Shire
444	A. F. Place	Humeston	Romulus 8851	French Draft
507	Clay Richman Horse Co.	Humeston	Rosier 28350 (48816)	Percheron
506	Clay - Richman	Humeston	Markeaton Primate 6774 (19825)	Shire
689	D. L. McMurray	Corydon	Bismark 10374	French Draft
423	A. H. Palmer	Humeston	Captain Pat 40845	Trotter
753	O. O. Littell	Corydon	Gentleman Joe II 6453	Shire
755	O. O. Littell & Co.	Corydon	Judge Halsey 33638	Trotter
754	O. O. Littell & Co.	Corydon	Guydirwood 28599	Trotter
748	J. F. Hickman	Humeston	Metropolitan 31753 (47585)	Percheron
788	T. A. C. Miller	Seymour	Harlequin 24591	Percheron
903	Clio Shire Horse Co.	Clio	Manea George 6888	Shire
961	Walnut Township Horse Co.	Seymour	Dunios 34507 (48527)	Percheron
1123	C. H. Trembly	Lineville	Kingsland Victor 7773 (20615)	Shire
1141	Thos. Allison	Sewal	Carroll 19192	Percheron
1230	C. R. Noble & L. W. Donald	Promise City	Donzelo 500	Belgian
1607	C. M. Fordyce	Powersville, Mo.	Creston Jerry 10997	French Draft

WAYNE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1716	Couchman & McNee	Sewal	Stuntney Hereward 6618 (Vol. 24)	Shire
1813	Confidence Shire Horse Co.	Promise City	Sentinel II 6883 (17612)	Shire
2295	Thos. Donald	Corydon	King of Perchie 18793	Percheron
2296	W. D. Wiley	Lineville	Lad 8364	Shire
2297	W. D. Wiley	Lineville	Roxey 8365	Shire
2412	W. D. Wiley	Lineville	Regular 7716	Shire
2637	A. H. Palmer	Humeston	Labourer de Horrues 2530 (34726)	Belgian
2538	Genoa Draft Horse Co.	Seymour	Barbancon 29924 (48667)	Percheron
2735	W. P. & T. H. Brown	Promise City	Stuntney Duke (Vol. 25)	Shire
2736	W. P. & T. H. Brown	Promise City	Tona 1470 (25380)	Belgian
2769	Tom Donald	Corydon	Walter 46030 (53154)	Percheron
1234	Otto Thomas	Seymour	Acadia 20265	Percheron
2891	C. T. Harper	Corydon	Creston Tom 4449	Shire
2914	T. H. & W. P. Brown	Promise City	Renzo (Vol. 21)	Hackney
621	R. E. Richie & J. C. Snodgrass	Allerton	Gambette 40142 (52972)	Percheron
3514	O. O. Littell	Corydon	Lightman 31396	Trotter
3515	O. O. Littell	Corydon	La Mark 11061	French Draft
4090	C. L. Murrow	Promise City	John the Baptist 5161	Morgan
4360	W. H. Thomas	Sewal	Robuste 54550 (63610)	Percheron
4393	R. W. Richie	Allerton	Colonel Colbert 39077	Trotter
4412	C. E. Pettit	Seymour	Bristol 52007 (67268)	Percheron
4440	Henry B. Scholty	Allerton	Xavier 14561	French Draft

WEBSTER COUNTY

960	Callender Horse Improving Co.	Callender	Attila 26064 (46766)	Percheron
1578	Frank Schill	Harcourt	Bijou de Lant (24954)	Belgian
1188	Knut Trondsen	Callender	Ismael Du Fosteau 1188	Belgian
1457	Roelyn Horse Co.	Mooreland	Page 40380 (54733)	Percheron
1503	A. G. Leonard	Dayton	Fred Douglas 17468	Percheron
1531	P. H. Halligan	Moorland	Newton Major 5559	Shire
1751	P. R. Peterson	Fort Dodge	Dreadnaught 8394	Shire
2703	Richard Cooper	Lehigh	Durantin 22699 (42408)	Percheron
2884	West Ft. Dodge Horse Co.	Fort Dodge	Black Dan 43111	Percheron
3025	Elkhorn Horse Co.	Kalo	Taupin 40711 (56545)	Percheron
322	Jno. McMohn & T. M. Butler	Barnum	Indianola Lad 34682	Percheron
3313	Chas. Anderson	Fort Dodge	General Macee 22379	Percheron
3404	Otho Horse Co.	Fort Dodge	Keiser 15888	French Draft
917	W. L. Ainsworth	Fort Dodge	Torouche de Melin 2650 (33950)	Belgian
3399	Knut Thorndson	Callender	Til de Ter 2569	Belgian
3603	J. I. Rutledge	Fort Dodge	Duke 11928	Clydesdale
3605	John McMahon	Clare	Straight Wood Jr. 35334	Trotter
3659	M. H. Andrews	Dayton	Printemps 24262 (43992)	Percheron
3898	Wm. Haurahan	Duncombe	Kongo King 9018	Shire
3925	J. C. Savage	Fort Dodge	Edenson 11931	Clydesdale
3926	John J. Tierney	Fort Dodge	Arcole 2851 (41884)	Belgian
3728	Clare Belgian Draft Horse Co.	Clare	Monarque de Taviers 2699 (29770)	Belgian
4082	John Crowley	Vincent	Perfection 16654	French Draft
2268	H. F. Hoyer & A. W. Hasselbring	Barnum	Black Monarch 42249	Percheron
1236	Richard Lee	Dayton	Monaboul Brownell 35309	Trotter
4134	John Greall	Duncombe	Gueridon 54384 (67632)	Percheron
3347	John A. Behrens	Fort Dodge	Keota Champion 20226	Percheron
2339	C. O. Humbert	Fort Dodge	Coco de Falaon 1552 (16044)	Belgian
4295	Crooks Draft Horse Co.	Burnside	Moniteur 44387 (26074)	Percheron

WINNEBAGO COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
123	Jno. Batchelor	Thompson	Nicodeme 31288 (46297)	Percheron
139	Johnston Bros.	Buffalo Center	Forfait III 26479	Percheron
140	Johnston Bros.	Buffalo Center	Red Payne 37596	Trotter
331	Joice Horse Co.	Lake Mills	Bardon 46504	Percheron
472	Sorn Olsen & Moe Bros.	Stacyville	Starr Brilliant 22480	Percheron
1251	C. E. Holcomb	Buffalo Center	Velo 31524 (47571)	Percheron
1250	C. E. Holcomb	Buffalo Center	Brilliant 27213	Percheron
2115	C. E. Holcomb	Buffalo Center	Victor 46937	Percheron
2116	C. E. Holcomb	Buffalo Center	Vigo 46936	Percheron
2513	R. B. Young	Buffalo Center	Superbe 42820 (60762)	Percheron
3215	Skiles Core	Forest City	Major Bernard 18561	Percheron
3216	Core Bros.	Forest City	Bernard II 42096	Percheron
3195	Johnston Bros.	Buffalo Center	Eglantier 41660 (48876)	Percheron
3196	Johnston Bros.	Buffalo Center	Archiduc 2522 (Vol. 13, p. 543)	Belgian
3608	W. E. Butcher	Forest City	W. E. Butcher 11114	Trotter
3622	O. A. Olson	Forest City	Zeno 35185	Percheron
4032	P. H. Harrington	Buffalo Center	Pool Jim 46473	Trotter
4167	B. L. Kerby	Lake Mills	Jest B. 38909	Trotter
4166	Lake Mills Percheron Horse Co.	Lake Mills	Annibal (624)	French Draft
4163	Johnston Bros.	Buffalo Center	Philceon 21274 (43155)	Percheron
2982	P. H. Harrington	Buffalo Center	Cartouche 42317	Percheron
4116	J. B. Keeler	Lake Mills	Peru 2785	French Coach

WINNESHIEK COUNTY

428	I. N. Reed	Burr Oak	Alger 35212 (52492)	Percheron
172	Bloomfield Belgian Draft Horse Co.	Castalia	Noe (25532)	Belgian
117	M. E. Marsh	Burr Oak	Mark Hanna 1070	Belgian
111	Percheron Horse Co.	Locust	Frondeur 29894 (46118)	Percheron
144	Franklin Draft Horse Co.	Decorah	Maretiaux 1380 (25292)	Belgian
255	Jacob Headington	Decorah	Major Pilot 7171	Shire
229	B. O. Bahken	Decorah	Galopin (54336)	Percheron
334	Belgian Draft Horse Co.	Decorah	Maurisse (25500)	Belgian
41	E. J. Curtin & G. F. Baker	Decorah	Claude Melnotte 33982	Trotter
71	Ossian Percheron Horse Co.	Ossian	Galant 24776 (43050)	Percheron
75	Ed Lynnes	Decorah	Jaquot (56946)	Percheron
481	Washington Prairie Breeders' Ass'n	Decorah	Athos 14347	French Draft
612	Decorah Coach Horse Co.	Decorah	Pirat 2599	German Coach
759	Hesper Draft Horse Co.	Hesper, Minn.	Baladin 42024 (54427)	Percheron
1980	Spillville Percheron Horse Co.	Fort Atkinson	Kleber 29581 (44593)	Percheron
2212	Adolph Running	Decorah	Henri 30170	Percheron
2316	Alex Sheggrud	Decorah	The Coupon 35474	Trotter
2949	Henry Steffes	Fort Atkinson	British Flag II 4350	Shire
2965	Burr Oak Belgian Draft Horse Co.	Burr Oak	Camin De Ligne 2375 (24356)	Belgian
3176	August Lansing	Ossian	Fancy Roy 10433	Clydesdale
3219	Thos. Floody	Ossian	Paros 15184 (27271)	Percheron
3409	Thos Floody	Ossian	Allcolyte 45452	Trotter
593	L. J. Anderson	Decorah	Prince Henry 6728	Shire
701	E. J. Curtain	Decorah	Superior 26492	Percheron
3917	W. B. Sphar	Castalia	Fickle Prince 11689	Clydesdale
4063	Bluffton Horse Co	Ridgeway	Pompon 40058 (42735)	Percheron
4368	W. H. Bachelder	Castalia	Chester 9191 (10526)	Clydesdale
96	Anderson Bros. (keepers)	Decorah	Sturmidor 29696	Percheron
3851	August Lansing	Ossian	Prince 11083	Clydesdale

WOODBURY COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
254	Hans Peterson	Danbury	Carlos (47475)	Percheron
257	D. M. Hamilton	Moville	Echo Chief 2d 5209	Shire
550	J. A. Clark	Hornick	Lord King 24529	Percheron
723	J. J. Buchan	Pierson	Sultan 10823	French Draft
957	The Lawton-Bronson Percheron Horse Co.	Bronson	Vandeix 34437 (46494)	Percheron
1118	A. B. Robinson	Sloan	Guy Caton 29643	Trotter
1244	Jas. Crabb	Bronson	Bruce MacGregor 8553	Clydesdale
1255	J. Onstot & J. Marquart	Lawton	Gazon 42873 (59782)	Percheron
1027	Lum Hollow Horse Co.	Smithland	Bayard 31302 (46064)	Percheron
1383	Fred Dyson	Sloan	King 12208	French Draft
1403	W. C. Coon	Anthon	Sampson 9687	French Draft
1509	Joseph Bernard	Anthon	March 12487	French Draft
1535	G. E. Loring	Sioux City	Woodfern 33140	Trotter
1596	Anthony Bower	Correctionville	Mark Hanna 12489	French Draft
2276	August Peterson	Danbury	Cacolet 46152 (55547)	Percheron
2281	J. E. Putnam	Smithland	Domero 33430	Trotter
2224	H. F. Ludwig	Leed's Station	Mystico 14653	French Draft
2526	Moville Percheron Horse Co.	Moville	Dominant (46091)	Percheron
2455	H. W. Goreham	Moville	King II 44627	Percheron
2711	Danbury Horse Co.	Danbury	Pollux de Caviers (30032)	Belgian
2845	Adam Trieber	Danbury	Odebolt Choice 11758	Clydesdale
2870	R. M. Foster	Correctionville	Wildair 23037	Percheron
2892	J. F. Brooks	Pierson	Oreste 21778 (43544)	Percheron
2967	A. A. Sadler	Correctionville	Bumper 45224	Percheron
2983	O. S. Pixler & G. W. Whitmer	Pierson	Financier 6135	Shire
3054	Ira Kelsey	Hornick	Rodrigo 40916	Percheron
3154	S. L. Spencer	Sloan	Our Baron 33108	Trotter
4206	Rudolph Utesch	Correctionville	Leger (16648)	Belgian
4415	F. C. Woodford	Glenellen	Lockly 45153	Trotter

WORTH COUNTY

248	Ramsey & Kingland	Joice	Trader 18996	Percheron
474	J. H. Huber	Meltonville	Selim 32699	Percheron
420	J. I. Hove	Northwood	Prince 31725	Percheron
2253	Deer Creek Draft Horse Co.	Deer Creek	Ardent 27452 (44168)	Percheron
2808	Ben Moore	Manly	Vallent 30183	Percheron
2875	M. J. Tracy	Manly	Dewey 23968	Percheron
2897	Danville Percheron Horse Co.	Kensett	Chaumont (52914)	Percheron
3321	Hartland Silver Lake Horse Co.	Northwood	Reliance 34086	Percheron
3503	H. Larson	Hanlontown	Culture 12778	Percheron
3624	Fertile Horse Co.	Fertile	Belnie Royal Harold 6781 (18512)	Shire
3625	Jorgen J. Brasdal	Joice	Black Duke 32045	Percheron
4021	Anton Nelson	Meltonville	Rambler 21004	Percheron
3959	D. A. Mitchell	Manly	Gladstone 12220	Clydesdale
4081	Ole G. Mellem	Northwood	Boneville 49511	Percheron
4209	C. H. Dancliff	Manly	Rex Wallace 50520	Percheron

WRIGHT COUNTY

815	Henry Mauss	Belmond	Corbon 34819	Percheron
902	Oliver Fryslie	Dows	Orient 27808 (47028)	Percheron
1292	G. W. Finn	Dows	Volunteer Clippings 41142	Trotter
1394	G. H. Jameson	Dows	De Arve 40182	Percheron
1395	G. H. Jameson	Dows	Kruger De Corthys 2228 (24678)	Belgian

WRIGHT COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1500	W. H. Mantle	Goldfield	Keota Decide 20211	Percheron
1755	E. G. Gould	Eagle Grove	Eden G. 42250	Trotter
2528	Polhemus Bros.	Belmond	Bonhomme 14113 (474)B	French Draft
2549	F. Luick & Son	Belmond	Virly 13530 (48482)P 42334	French Draft Percheron
2550	F. Luick & Son	Belmond	DuPiton 17063 (33658)	Percheron
2705	Dows Shire Horse Co.	Dows	Exton Vulcan 6997 (Vol. 25)	Shire
1926	J. C. Gingerich	Eagle Grove	Obstine 50544 (62536)	Percheron
2818	J. H. Callahan	Goldfield	Keota Garfield 4970	Shire
2856	E. Vest	Goldfield	Maraudeur 44468 (55601)	Percheron
3521	D. D. Wood	Goldfield	Riflard 28393 (47064)	Percheron
3615	E. Bohnett	Clarion	Warrulton 13107 (45082)	French Draft
3652	Eagle Grove Percheron Horse Co.	Eagle Grove	Castellane 14662 (45082) 28151	Percheron French Draft
3738	Hickory Grove Horse Co.	Belmond	Lambin 51241 (60152)	Percheron
4028	German Horse Co	Belmond	Gold Lad (Vol. 24)	Clydesdale
3378	W. A. Evans	Eagle Grove	Ward 5819 (18431)	Shire
3265	E. Luick	Belmond	Boulon 14862 (62679)	French Draft
3254	Cornelia Horse Co	Clarion	Pascal (25498)	Belgian
4395	F. H. Brooks	Belmond	Marabout 10911 (3382)	French Draft

HORSES OWNED OUTSIDE OF STATE NEAR STATE LINE

4203	Emmons Draft Horse Co.	Emmons, Minn.	Kruger 35231 (53175)	Percheron
3623	J. V. Gillard	Glenville, Minn.	Togo 42585	Percheron
4366	E. S. Tead & Sons	Canton, Minn.	Prince Favorite 40164	Percheron
3517	Sam Domrud	Canton, Minn.	Gables Pride 7125 (21450)	Shire
4441	John Michel	Harmony, Minn	Anodin 35213 (53366)	Percheron
4470	A. G. Anderson	Worthington, Minn.	Phoenix 45531	Percheron
4096	Andrew G. Anderson	Worthington, Minn.	Quentin 44080	Percheron
1792	J. L. Thomson	Guilford, Mo.	Major II 9080	Shire

PART XIII

Directory of Associations and Organizations Representing Agricultural Interests in Iowa and Other States.

IOWA DEPARTMENT OF AGRICULTURE: President, C. E. Cameron, Alta; Vice-President, W. C. Brown, Clarion; Secretary, J. C. Simpson, Des Moines; Treasurer, G. S. Gilbertson, Des Moines.

IOWA STATE HORTICULTURE SOCIETY: President, W. M. Bomberger, Harlan; Vice-President, William Laughan, Cedar Rapids; Secretary, Wesley Greene, Des Moines; Treasurer, Elmer M. Reeves, Waverly.

IOWA PARK AND FORESTRY ASSOCIATION: President, E. Secor, Forest City; Vice-President, B. Shimek, Iowa City; Secretary, Wesley Greene, Des Moines; Treasurer, A. T. Erwin, Ames.

SOCIETY OF IOWA FLORISTS: President, Judson Kramer, Cedar Rapids, Vice-President, Chas. N. Page, Des Moines; Secretary, Wesley Greene, Des Moines; Treasurer, Peter Lambert, Des Moines.

IOWA GRAIN DEALERS' ASSOCIATION: President, G. A. Stebbens, Red Oak; Vice-President, I. E. Jackson, Cedar Rapids; Secretary-Treasurer, Geo. A. Wells, Des Moines.

IOWA CORN GROWERS' ASSOCIATION: President, John Sundberg, Whiting; Vice-President, J. W. Coverdale, Elwood; Secretary, B. W. Crossley, Ames; Treasurer, Fred M. McCulloch, Hartwick.

CORN BELT MEAT PRODUCERS' ASSOCIATION: President, A. Sykes, Des Moines; Vice-President, C. M. Maher, Fort Dodge; Secretary, H. C. Wallace, Des Moines; Treasurer, Chas. Goodenow, Wall Lake.

IOWA GOOD ROADS ASSOCIATION: President, Henry Harlow, Onawa; Vice-President, A. C. Steele, Coon Rapids; Secretary-Treasurer, Thos. H. MacDonald, Ames.

THE FARMERS' GRAIN DEALERS' ASSOCIATION: President, J. H. Brown, Rockwell; Vice-President, B. Hathoway, Kingsley; Secretary, C. A. Messerole, Gowrie; Treasurer, Peter Gorman, Dougherty.

IOWA SWINE BREEDERS' ASSOCIATION: President, E. Z. Russell, Blair, Neb.; Vice-President, John M. Cox, Jr., Harlan; Secretary-Treasurer, William D. McTavish, Coggon.

IOWA STATE DAIRY ASSOCIATION: President, W. B. Barney, Hampton; Vice-President, L. S. Edwards, Lamotte; Secretary, W. B. Johnson, Des Moines; Treasurer, Frank Brown, Cedar Rapids.

FARMERS' COUNTY INSTITUTES IN IOWA.

ADAIR—President, A. C. Savage, Adair; Secretary, D. J. Cowden, Adair.

ADAMS—President, C. T. O'Key, Prescott; Secretary, T. E. Shanley, Prescott.

BENTON—President, Geo. Aherns, Belle Plaine; Secretary, Fred McCulloch, Belle Plaine.

BLACK HAWK—President, E. M. Lichty, Waterloo; Secretary, Ernest R. Sage, Waterloo.

BREMER—President, J. W. Bennett, Janesville; Secretary, E. M. Reeves, Waverly.

BUCHANAN—President, O. K. Crew, Independence; Secretary, W. H. Miller, Independence.

BUENA VISTA—President, C. F. Kinnie; Secretary, S. R. Haines, Storm Lake.

BUTLER—President, Geo. Adair, Shell Rock; Secretary, B. Leavens, Dumont.

CALHOUN—President, W. F. Schwark, Loherville; Secretary, Henry Parsons, Rockwell City.

CEDAR—President, Geo. H. Escher, West Branch; Secretary, L. J. Rowell, West Branch.

CERRO GORDO—President, D. McArthur, Mason City; Secretary, J. H. Carr, Mason City.

CHEROKEE—President, A. R. Hubbard, Quimby; Secretary, W. P. Dawson, Quimby.

CHICKASAW—President, J. M. Heald, Nashua; Secretary, E. E. Tracy, Nashua.

CLAY—President, F. H. Black, Spencer; Secretary, Mrs. F. A. Square, Spencer.

CLAYTON—President, Wm. Leonard, Elkader; Secretary, L. D. Smith, St. Olaf.

CLINTON—President, Warren Walrod, De Witt; Secretary, J. W. Coverdale, Elwood.

DALLAS—President, Geo. T. White, Dallas Center; Secretary, M. J. Graham, Adel.

DECATUR—President, Wm. Chriehton, Leon; Secretary, Claude Wood, Weldon.

DELAWARE—President, T. H. Corrothers, Ryan; Secretary, C. A. Clute, Manchester.

DICKINSON—President, Fred La Due, Spirit Lake; Secretary, Ike Mitchell, Spirit Lake.

EMMET—President, L. L. Bingham, Estherville; Secretary, C. S. Blakey, Estherville.

FAYETTE—President, J. S. Smith, West Union; Secretary, G. W. Van Atten, West Union.

FLOYD—President, Ike P. Dixon, Sidney; Secretary, T. W. Hutchison, Anderson.

FRANKLIN—President, Olliver Yelland, Sheffield; Secretary, F. H. Dirst, Hampton.

FREMONT—President, I. P. Dixon, Sidney; Secretary, J. F. Stephens, Sidney.

GREENE—President, R. G. Martin, Dana; Secretary, L. C. Cochran, Scranton.

GRUNDY—President, Wm. Mooty, Grundy Center; Lewis W. Plager, Grundy Center.

GUTHRIE—President, Grant Chapman, Bagley; Secretary, S. J. Reed, Guthrie Center.

HAMILTON—President, E. C. Maylor, Stratford; Secretary, O. L. Swedhud, Stratford.

HANCOCK—President, F. G. Oxley, Corwith; Secretary, J. W. Schwab, Stilson.

HARRISON—President, W. S. Kelley, Mondamin; Secretary, Mrs. Peter Peterson, Logan.

HOWARD—President, W. T. Forry, Cresco; Secretary, J. J. Driscoll, Cresco.

HUMBOLDT—President, T. H. Gamble, Humboldt; Secretary, A. J. Hock, Humboldt.

IDA—President, E. G. Preston, Battle Creek; Secretary, Chas. Rueck, Battle Creek.

IOWA—President, Edward Boland, Williamsburg; Secretary, Robert Edwards, Williamsburg.

JACKSON—President, L. B. Parshall, Canton; Secretary, L. L. Littlefield, Lamotte.

JASPER—President, T. J. Kating, Newton; Secretary, John Hawn, Newton.

JOHNSON—President, J. Wm. Schkeiman, North Liberty; Secretary, S. S. Stoner, North Liberty.

KEOKUK—President, W. S. Chacy, Nugent; Secretary, G. E. Barnhart, South English.

KOSSUTH—President, Mark Parsons, Algona; Secretary, I. W. Hutchins, Algona.

LEE—President, Joseph Fry, Weaver; Secretary, E. C. Lynn, Donnelson.

LINN—President, C. R. Mills, Springville; Secretary, F. B. Pierpont, Springville.

LOUISA—President, C. B. Wilson, Morning Sun; Secretary, T. J. Hewitt, Morning Sun.

LUCAS—President, S. A. Threlkeld, Chariton; Secretary, J. C. Williamson, Chariton.

LYON—President, E. C. Elliott, Inwood; Secretary, C. B. Lankin, Inwood.

MADISON—President, Stephen A. Hayes, Earlham; Secretary, Wm. J. Raymond, St. Charles.

MAHASKA—President, E. F. Hanna, Lacey; Secretary, F. F. Everett, Oskaloosa.

MARION—President, D. W. Ward, Knoxville; Secretary, J. D. Schlotterback, Knoxville.

MARSHALL—President, Merritt Greene, Jr., Marshalltown; Secretary, M. A. Hauser, Allison.

MILLS—President, J. M. Anthony, Glenwood; Secretary, G. Hanson, Glenwood.

MITCHELL—President, Wm. B. Allison, Osage; Secretary, W. H. Richards, Osage.

MONONA—President, Will C. Whiting, Whiting; Secretary, W. G. Brown, Whiting.

MONROE—President, W. S. Graham, Albia; Secretary, L. M. Perrin, Albia.

MUSCATINE—President, A. Rexroth, Wilton Junction; Secretary, Geo. W. Kelley, Wilton Junction.

O'BRIEN—President, David Peckham, Paullina; Secretary, Alvin Potter, Paullina.

OSCEOLA—President, W. J. Reeves, Sibley; Secretary, C. W. Sollitt, Sibley.

PAGE—President, G. W. Trimble, College Springs; Secretary, Wm. Forquhor, College Springs.

PALO ALTO—President, Wm. Penn, Graettinger; Secretary, E. M. Thompson, Graettinger.

POCAHONTAS—President, C. M. Saylor, Pomeroy; Secretary, Ed Meredith, Havelock.

POLK—President, O. O. Brewbaker, Ankeny; Secretary, S. W. McClain, Grimes.

POWESHIEK—President, H. H. Connell, Deep River; Secretary, George Icenbice, Deep River.

RINGGOLD—President, Elmer E. Norris, Mt. Ayr; Secretary, Grant Stahl, Mt. Ayr.

SAC—President, A. L. Mason, Early; Secretary, C. D. Bogue, Early.

SCOTT—President, Chris Marti, Donahue; Secretary, R. McRohlfs, Davenport.

SHELBY—President, H. B. Kers, Harlan; Secretary, Wm. Bomberger, Harlan.

SIOUX—President, J. C. Emery, Orange City; Secretary, Geo. A. Sheldon, Hull.

STORY—President, W. P. George, Ames; Secretary, G. C. White, Nevada.

TAMA—President, C. E. Lambert, Buckingham; Secretary, R. C. Wood, Traer.

TAYLOR—President, Jas. Edmonds, Lenox; Secretary, G. E. Campbell, Gravity.

UNION—President, L. J. Day, Afton; Secretary, Will Boys, Creston.

VAN BUREN—President, A. C. Mineor, Keosauqua; Secretary, A. F. Sample, Keosauqua.

WAPELLO—President, W. A. C. Brown, Ottumwa; Secretary, Chas. Bluhm, Ottumwa.

WARREN—President, E. B. Igo, Indianola; Secretary, J. F. Samson, Indianola.

WASHINGTON—President, H. T. Reynolds, Washington, Secretary, John S. Wilson, Washington.

WAYNE—President, Fred H. Duncan, Allerton; Secretary, O. B. Cobb, Allerton.

WINNEBAGO—President, J. H. Anderson, Forest City; Secretary, L. C. Brown, Forest City.

WINNESHIEK—President, John McMillon, Moble, Minn.; Secretary, W. Albert Van Vleit, Hesper.

WORTH—President, T. L. Bolton, Northwood; Secretary, E. J. McQuatters, Northwood.

WOODBURY—President, R. J. Anderson, Moville; Secretary, Chas. H. Babcock, Moville.

WRIGHT—President, F. A. Thayer, Dows; Secretary, A. C. Fuller, Dows.

COUNTY AND DISTRICT AGRICULTURAL SOCIETIES AND FAIR ASSOCIATIONS IN IOWA.

ADAIR—Adair County Agricultural Society, Greenfield; President, S. H. Moffitt, Greenfield; Secretary, W. W. West, Greenfield.

ADAIR—Adair District Fair Association; President, Preston Powel, Adair; Secretary, A. C. Savage, Adair.

ADAMS—Adams County Agricultural Society, Corning; President, S. M. Richey, Corning; Secretary, Geo. E. Bliss, Corning.

ALLAMAKEE—Allamakee County Agricultural Society, Waukon; President, S. H. Opfer, Waukon; Secretary, A. C. Larson, Waukon.

AUDUBON—Audubon County Agricultural Society, Audubon; President, G. W. Hoover, Audubon; Secretary, S. E. Curtis, Audubon.

BENTON—Benton County Agricultural Society, Vinton; President, I. Mitchell, Vinton; Secretary, A. Thompson, Vinton.

BLACK HAWK—La Porte City District Fair Association, La Porte City; President, Jas. Husman, La Porte City; Secretary, B. L. Manwell.

BOONE—Boone County Agricultural Society, Ogden; President, C. H. Williamson, Ogden; Secretary, W. C. Treloar, Ogden.

BOONE—Boone Driving Park and Fair Association, Boone; President, W. R. Matt, Boone; Secretary, A. M. Burnside, Boone.

BUCHANAN—Buchanan County Agricultural Society, Independence; President, Rudolph Leytze, Independence; Secretary, Chas. L. King, Independence.

BUENA VISTA—Buena Vista County Agricultural Society, Alta; President, M. Adams, Alta; Secretary, A. L. Denio, Alta.

BUTLER—Butler County Agricultural Society, Allison; President, John Couer, Shell Rock; Secretary, N. W. Scovel, Shell Rock.

CALHOUN—Calhoun County Fair Association, Manson; President, Thos. Griffen, Manson; Secretary, C. G. Kaskey, Manson.

CALHOUN—Rockwell City Fair Association, Rockwell City; President, Andrew Stewart, Rockwell City; Secretary, W. L. Stewart, Rockwell City.

CASS—Cass County Agricultural Society, Atlantic, President, Mose Bell, Atlantic; Secretary, E. E. Marquis, Atlantic.

CASS—Massena District Fair Association, Massena; President, S. D. Wyckoff, Massena; Secretary, D. P. Hogan, Massena.

CARROLL—Carroll Fair and Driving Park Association, Carroll; President, H. S. Haselton, Carroll; Secretary, H. C. Stevens, Carroll.

CEDAR—Tipton Fair Association, Tipton; President, L. J. Rowell, Tipton; Secretary, F. H. Connor, Tipton.

CERRO GORDO—Northern Iowa Agricultural Society, Mason City; President, Geo. H. Purdy, Mason City; Secretary, W. S. Rankin, Mason City.

CHICKASAW—Big Four Fair Association, Nashua; President, W. P. Raymond, Nashua; Secretary, C. L. Putney, Nashua.

CLAYTON—Clayton County Agricultural Society, National; President, Jos. Matt, St. Olaf; Secretary, Henry Luchsen, Garnavillo.

CLAYTON—Strawberry Point District Agricultural Society, Strawberry Point; President, G. F. Wheeler, Strawberry Point; Secretary, I. P. Howard, Strawberry Point.

CLAYTON—Elkader Fair and Track Association, Elkader; President, Henry Koehn, Elkader; Secretary, W. W. Davidson, Elkader.

CLINTON—Clinton County Agricultural Society, De Witt; President, D. Armentrout, De Witt; Secretary, E. J. Quigley, De Witt.

CLINTON—Clinton District Agricultural, Fine Stock and Fair Association, Clinton; President, John L. Wilson, Almont; Secretary, John B. Ahrnes, Lyons.

CRAWFORD—Crawford County Fair Association, Arion; President, Thos. Rea, Arion; Secretary, M. B. Nelson, Arion.

DAVIS—Davis County Agricultural Society, Bloomfield; President, J. M. Lain, Bloomfield; Secretary, H. C. Leech, Bloomfield.

DELAWARE—Delaware County Agricultural Society, Manchester; President, L. L. Hoyt, Manchester; Secretary, J. J. Pentony, Manchester.

DES MOINES—Des Moines County Fair Association, Burlington; President, John B. Hunt, Burlington; Secretary, C. C. Fowler, Burlington.

EMMET—Estherville Agricultural Society, Estherville; President, H. Oransky, Estherville; Secretary, A. J. Rhodes, Estherville.

FAYETTE—Fayette County Agricultural Society, West Union; President, A. S. Smith, West Union; Secretary, A. J. Gurney, West Union.

FLOYD—Floyd County Agricultural Society, Charles City; President, W. D. Lindaman, Charles City; Secretary, W. B. Johnson, Charles City.

FRANKLIN—Franklin County Agricultural Society, Hampton; President, F. J. Scantlebeny, Hampton; Secretary, Floyd Gillett, Hampton.

GRUNDY—Grundy County Agricultural Society, Grundy Center; President, H. N. Dilly, Grundy Center; Secretary, C. E. Thomas, Grundy Center.

GUTHRIE—Guthrie County Agricultural Society, Guthrie Center; President, J. G. Thomas, Guthrie Center; Secretary, T. E. Grissell, Guthrie Center.

HAMILTON—Hamilton County Fair Association, Webster City; President, F. A. P. Tatham, Webster City; Secretary, P. J. Brandruf, Webster City.

HANCOCK—Hancock County Agricultural Society, Britt; President, A. J. Cole, Britt; Secretary, Jas. L. Manuel, Britt.

HARDIN—Hardin County Agricultural Society, Eldora; President, R. B. Lynk, Eldora; Secretary, H. S. Martin, Eldora.

HARRISON—Harrison County Agricultural Society, Missouri Valley; President, C. H. Deur, Missouri Valley; Secretary, W. H. Withrow, Missouri Valley.

HENRY—Henry County Agricultural Society, Mt. Pleasant; President, T. F. Campbell, Mt. Pleasant; Secretary, O. N. Knight, Mt. Pleasant.

HENRY—Winfield Fair Association, Winfield; President, R. P. Davidson, Winfield; Secretary, O. E. Wilson, Winfield.

HUMBOLDT—Humboldt County Agricultural Society, Humboldt; President, S. H. Gove, Gilmore City; Secretary, John Cunningham, Humboldt.

IOWA—Iowa County Agricultural Society, Marengo; President, C. M. Beem, Marengo; Secretary, Alex McLennan, Marengo.

IOWA—Victor District Agricultural Society, Victor; President, Chas. Raffensperger, Victor; Secretary, J. P. Bowling, Victor.

IOWA—Williamsburg Fair Association, Williamsburg; President, E. W. Lloyd, Williamsburg; Secretary, Chas. Fletcher, Williamsburg.

JACKSON—Jackson County Agricultural Society, Maquoketa; President, Jos. Dostal, Maquoketa; Secretary, B. D. Ely, Maquoketa.

JASPER—Jasper County Agricultural Society, Newton; President, C. F. Sauerman, Newton; Secretary, J. H. Gribben, Newton.

JEFFERSON—Jefferson County Agricultural Society, Fairfield; President, J. P. Manatrey, Fairfield; Secretary, D. R. Beatty, Fairfield.

JOHNSON—Johnson County Agricultural Society, Iowa City; President, E. M. Stevens, Iowa City; Secretary, Geo. A. Hitchcock, Iowa City.

JONES—Jones County Agricultural Society, Monticello; President, J. E. Bateman, Monticello; Secretary Oscar E. Bucklin, Monticello.

JONES—Anamosa Fair Association, Anamosa; President, Joe Tyler, Anamosa; Secretary, L. W. Russell, Anamosa.

KEOKUK—What Cheer District Agricultural Society, What Cheer; President, Jas. Stephenson, What Cheer; Secretary, Geo. A. Poff, What Cheer.

KOSSUTH—Kossuth County Agricultural Society, Algona; President, J. M. Farley, Whittemore; Secretary, W. E. McDonald, Algona.

LEE—Lee County Agricultural Society, Donnelson; President, T. H. Donnell, Donnelson; Secretary, Chris Haffner, Donnelson.

LEE—West Point District Agricultural Society, West Point; President, John Lackmann, Weaver; Secretary, John Walljasper, West Point.

LINN—Wapsie Valley Fair Association, Central City; President, E. M. Lanning, Albernett; Secretary, E. E. Henderson, Central City.

LINN—Prairie Valley Fair Association, Fairfax; President, Geo. O'Connell, Cedar Rapids; Secretary, Thos. Delaney, Fairfax.

LINN—Marion Inter-State Fair Association, Marion; President, C. A. Patton, Marion; Secretary, J. B. Travis, Marion.

LOUISA—Wapello District Fair Association, Wapello; President, T. J. Klotz, Columbus Junction; Secretary, N. T. Hendrix, Columbus Junction.

LOUISA—Columbus Junction District Fair Association, Columbus Junction; President, T. J. Klotz, Columbus Junction; Secretary, N. T. Hendrix, Columbus Junction.

LYON—Lyon County Fair and Agricultural Society, Rock Rapids; President, J. H. Harrison, Rock Rapids; Secretary, A. S. Wold, Rock Rapids.

MADISON—Madison County Agricultural Society, Winterset; President, A. D. Guy, Winterset; Secretary, John Duff, Winterset.

MAHASKA—New Sharon District Agricultural Society, New Sharon; President, C. E. Rakestraw, Montezuma; Secretary, R. P. Doze, New Sharon.

MARION—Lake Prairie District Agricultural Society, Pella; President, C. M. Van Cleave, Pella; Secretary, Chas Porter, Pella.

MARSHALL—Eden District Agricultural Society, Rhodes; President, H. G. Buck, Rhodes; Secretary, H. F. Stauffer, Rhodes.

MARSHALL—Marshall County Fair Association, Marshalltown; President, J. B. Classen, Green Mountain; Secretary, W. M. Clark, Marshalltown.

MILLS—Mills County Agricultural Society, Malvern; President, Sherman Jones, Malvern; Secretary, V. G. Williams, Malvern.

MITCHELL—Mitchell County Agricultural Society, Osage; President, Richard Dorsey, Osage; Secretary, W. H. Gable, Osage.

MONONA—Monona County Fair Association, Onawa; President, C. B. Ellis, Onawa; Secretary, A. W. Burgess, Onawa.

MONTGOMERY—Montgomery County Fair Association, Red Oak; President, Henry Eberts, Red Oak; Secretary, W. S. Ellis, Red Oak.

MUSCATINE—Union District Agricultural Society, West Liberty; President, J. L. Peters, West Liberty; Secretary, W. H. Shipman, West Liberty.

MUSCATINE—Wilton Fair Association, Wilton Junction; President, L. N. Ayres, Wilton Junction; Secretary, H. Wildasin, Wilton Junction.

O'BRIEN—O'Brien County Agricultural Society, Sutherland; President, Chas. Youde, Sutherland; Secretary, J. B. Murphy, Sutherland.

O'BRIEN—Sheldon District Fair Association, Sheldon; President, C. H. Runger, Sheldon; Secretary, Joe Morton, Sheldon.

PAGE—Clarinda Fair Association, Clarinda; President, C. E. McDowell, Clarinda; Secretary, J. C. Beckner, Clarinda.

PAGE—Shenandoah Fair Association, Shenandoah; President, Chas. Aldrich, Shenandoah; Secretary, A. W. Goldberg, Shenandoah.

PALO ALTO—Palo Alto County Fair and Racing Association, Emmetsburg; President, W. S. Parnham, Emmetsburg; Secretary, F. H. Wells, Emmetsburg.

POCAHONTAS—Big Four District Fair Association, Fonda; President, R. F. Beswick, Fonda; Secretary, John Forbes, Fonda.

POTTAWATTAMIE—Pottawattamie County Fair Association, Avoca; President, D. Gross, Avoca; Secretary, Caleb Smith, Avoca.

POWESHIEK—Poweshiek County Central Agricultural Society, Malcom; President, Wm. McClure, Malcom; Secretary, James Novak, Malcom.

POWESHIEK—Poweshiek County Central Agricultural Society, Grinnell; President, Samuel Jacob, Jacob; Secretary, I. S. Bailey, Jr., Grinnell.

RINGGOLD—Ringgold County Fair Association, Mt. Ayr; President, D. B. Marshall, Mt. Ayr; Secretary, F. E. Sheldon, Mt. Ayr.

SAC—Sac County Agricultural Society, Sac City; President, Phil Schaller, Sac City; Secretary, W. H. Pettis, Sac City.

SHELBY—Shelby County Agricultural Society, Harlan; President, W. L. Baughn, Harlan; Secretary, Fred Frazier, Harlan.

SIOUX—Sioux County Agricultural Society, Orange City; President, A. Van der Meide, Orange City; Secretary, H. Slikkerveer, Orange City.

SIOUX—Rock Valley District Fair Association, Rock Valley; President, James Walpole, Rock Valley; Secretary, Dennis Scanlan, Rock Valley.

STORY—Story County Agricultural Society, Nevada; President, A. C. Dean, Nevada; Secretary, F. H. Greenawalt, Nevada.

TAMA—Tama County Fair Association, Toledo; President, Isaac Voorhes, Tama; Secretary, A. G. Smith, Toledo.

TAYLOR—Taylor County Agricultural Society, Bedford; President, J. J. Clark, Bedford; Secretary, F. N. Lewis, Bedford.

UNION—Creston District Fair Association, Creston; President, N. D. Merrill, Creston; Secretary, J. M. McCornack, Creston.

VAN BUREN—Milton District Agricultural Society, Milton; President, H. C. Hill, Milton; Secretary, D. A. Miller, Milton.

WAPELLO—Eldon Big Four Fair Association, Eldon; President, D. A. Jay, Eldon; Secretary, H. R. Baker, Eldon.

WARREN—Warren County Fair Association, Indianola; President, Lee Talbott, Indianola; Secretary, Joe McCoy, Indianola.

WINNEBAGO—Forest City Park and Fair Association, Forest City; President, O. A. Olson, Forest City; Secretary, J. A. Peters, Forest City.

WINNEBAGO—Buffalo Center District Fair and Driving Park Association, Buffalo Center; President, F. T. Sparks, Buffalo Center; Secretary, J. P. Boyd, Buffalo Center.

WINNESHIEK—Winneshiek County Agricultural Society, Decorah; President, Edward Bear, Decorah; Secretary, L. L. Cadwell, Decorah.

WORTH—Worth County Agricultural Society, Northwood; President, Nels Thorson, Northwood; Secretary, E. H. Miller, Northwood.

WRIGHT—Wright County Agricultural Society, Clarion; President, Daniel Huntley, Clarion; Secretary, Chas. Rotzler, Clarion.

AGRICULTURAL COLLEGES AND OTHER INSTITUTIONS IN THE UNITED STATES HAVING COURSES IN AGRICULTURE.[a]*

College instruction in agriculture is given in the colleges and universities receiving the benefits of the acts of Congress of July 2, 1862, and August 30, 1890, which are now in operation in all the States and Territories, except Alaska, Hawaii, and Porto Rico. The total number of these institutions is 65, of which 63 maintain courses of instruction in agriculture. In 21 states the agricultural colleges are departments of the state universities. In 15 states and territories separate institutions having courses in agriculture are maintained for the colored race. All of the agricultural colleges for white persons and several of those for negroes offer four-year courses in agriculture and its related sciences leading to bachelors' degrees, and many provide for graduate study. About 45 of these institutions also provide special, short, and correspondence courses in the different branches of agriculture, including agronomy, horticulture, animal husbandry, poultry raising, cheese making, dairying, sugar making, rural engineering, farm mechanics, and other technical subjects. The officers of the agricultural colleges, engage quite largely in conducting farmers' institutes and various other forms of college extension. The agricultural experiment stations with very few exceptions are departments of the agricultural colleges. The total number of persons engaged in the work of education and research in the land-grant colleges and the experiment stations in 1905 was 5,406; the number of students in these colleges,

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[a] Including only institutions established under the land-grant act of July 2, 1862.

* Data following taken from bulletin published by the United States Department of Agriculture.

59,812; the number of students (white) in the four-year college courses in agriculture, 2,638; in short and special courses, 3,885. There were also 1,624 students in agriculture in the separate institutions for negroes. With a few exceptions each of these colleges offers free tuition to residents of the state in which it is located. In the excepted cases scholarships are open to promising and energetic students; and, in all, opportunities are found for some to earn part of their expenses by their own labor. The expenses are from $125 to $300 for the school year.

AGRICULTURE COLLEGES AND OTHER INSTITUTIONS IN THE UNITED STATES HAVING COURSES IN AGRICULTURE—CONTINUED.

State or Territory	Name of Institution.	Location	President
Alabama	Alabama Polytechnic Institute	Auburn	C. C. Thach, LL. D.
	Agricultural and Mechanical College for Negroes	Normal	W. H. Council, Ph. D.
Arizona	University of Arizona	Tucson	K. C. Babcock, Ph. D.
Akansas	University of Arkansas	Fayetteville	J. N. Tilman, B. LL.
California	University of California	Berkeley	B. I. Wheeler, Ph. D., LL. D.
Colorado	The State Agricultural College of Colorado	Fort Collins	B. O. Aylesworth, LL. D., Litt. D.
Connecticut	Connecticut Agricultural College	Storrs	R. W. Stimson, A. M.
Delaware	Delaware College	Newark	G. A. Harter, Ph. D.
	State College for Colored Students	Dover	W. C. Jason, M. A.
Florida	University of Florida	Lake City	Andrew Sledd, Ph. D., LL. D.
	Florida State Normal and Industrial College	Tallahassee	N. B. Young, M. A.
Georgia	Georgia State College of Agriculture and Mechanic Arts	Athens	H. C. White, Ph. D.
	Georgia State Industrial College	Savannah	R. R. Wright, LL.D.
Idaho	University of Idaho	Moscow	J. A. MacLean, Ph. D.
Illinois	University of Illinois	Urbana	E. J. James, Ph. D., LL. D.
Indiana	Purdue University	Lafayette	W. E. Stone, Ph. D.
Iowa	Iowa State College of Agriculture and Mechanic Arts	Ames	A. B. Storms, D. D., LL. D.
Kansas	Kansas State Agricultural College	Manhattan	E. R. Nichols, A. M.
Kentucky	Agricultural and Mechanical College of Kentucky	Lexington	J. K. Patterson, Ph. D., LL. D.
	The Kentucky Normal and Industrial Institute for Colored Persons	Frankfort	J. S. Hathaway, M. A., M. D.
Louisiana	Louisiana State University and Agricultural and Mechanical College	Baton Rouge	T. D. Boyd, LL. D.
	Southern University and Agricultural and Mechanical College	New Orleans	H. A. Hill.
Maine	The University of Maine	Orono	G. E. Fellows, Ph. D., LL. D.
Maryland	Maryland Agricultural College	College Park	R. W. Silvester, M. S.
	Princess Anne Academy, Eastern Branch, Maryland Agricultural College	Princess Anne	F. Trigg, M. A.
Massachusetts	Massachusetts Agricultural College	Amherst	W. P. Brooks, Ph. D.*
Michigan	Michigan State Agricultural College	Agricultural College	J. L. Snyder, Ph. D.
Minnesota	The University of Minnesota	St. Anthony Park	C. Northrop, LL. D.
Mississippi	Mississippi Agricultural and Mechanical College	Agricultural College	J. C. Hardy, LL. D.
	Alcorn Agricultural and Mechanical College	Lorman	L. J. Rowan, B. S.
Missouri	The University of Missouri	Columbia	R. H. Jesse, LL. D.
	Lincoln Institute	Jefferson City	B. F. Allen, LL. D.
Montana	The Montana College of Agriculture and Mechanic Arts	Bozeman	J. H. Hamilton, M. S.
Nebraska	The University of Nebraska	Lincoln	E. B. Andrews, LL. D.
Nevada	Nevada State University	Reno	J. E. Stubbs, D. D., LL. D.

AGRICULTURAL COLLEGES AND OTHER INSTITUTIONS IN THE UNITED STATES HAVING COURSES IN AGRICULTURE—CONTINUED.

State or Territory	Name of Institution.	Location	President
New Hampshire	The New Hampshire College of Agriculture and the Mechanic Arts	Durham	W. D. Gibbs, M. S.
New Jersey	Rutgers Scientific School, the New Jersey State College for the Benefit of Agriculture and the Mechanic Arts.	New Brunswick	W. H. S. Demarest.
New Mexico	The New Mexico College of Agriculture and Mechanic Arts	Agricultural College	Luther Foster, M. S. A.
New York	Cornell University	Ithaca	J. G. Schurman, D. Sc., LL. D.
North Carolina	The North Carolina College of Agriculture and Mechanic Arts	West Raleigh	G. T. Winston, LL. D.
	The Agricultural and Mechanical College for the Colored Race	Greensboro	J. B. Dudley, LL. D.
North Dakota	North Dakota Agricultural College	Agricultural College	J. H. Worst, LL. D.
Ohio	Ohio State University	Columbus	W. O. Thompson, D. D., LL. D.
Oklahoma	Oklahoma Agricultural and Mechanical College	Stillwater	A. C. Scott, LL. M.
	Agricultural and Normal University	Langston	I. E. Page, M. A.
Oregon	Oregon State Agricultural College	Corvallis	T. M. Gatch, Ph. D.
Pennsylvania	The Pennsylvania State College	State College	G. W. Atherton, LL. D.
Rhode Island	Rhode Island College of Agriculture and Mechanic Arts	Kingston	K. L. Butterfield, A. M.
South Carolina	Clemson Agricultural College of South Carolina	Clemson College	P. H. Mell, Ph. D., LL. D.
	The Colored Normal, Industrial, Agricultural and Mechanical College of South Carolina	Orangeburg	T. E. Miller, LL. D.
South Dakota	South Dakota Agricultural College	Brookings	R. L. Slagle.
Tennessee	University of Tennessee	Knoxville	Brown Ayres, Ph. D., LL. D.
Texas	Agricultural and Mechanical College of Texas	College Station	H. H. Harrington, M. S.
	Prairie View State Normal and Industrial College	Prairie View	E. L. Blackshear.
Utah	The Agricultural College of Utah	Logan	W. J. Kerr, D. Sc.
Vermont	University of Vermont and State Agricultural College	Burlington	M. *H. Buckham, D. D., LL. D.
Virginia	The Virginia Agricultural and Mechanical College and Polytechnic Institute	Blacksburg	J. F. McBryde, Ph. D., LL. D.
	The Hampton Normal and Agricultural Institute	Hampton	H. B. Frissell, D. D., LL. D.
Washington	The State College of Washington	Pullman	E. A. Bryan, LL. D.
West Virginia	West Virginia University	Morgantown	D. B. Purinton, Ph. D., LL. D.
	The West Virginia Colored Institute	Institute	J. McH. Jones, A. M.
Wisconsin	University of Wisconsin	Madison	C. R. Van Hise, Ph. D.
Wyoming	University of Wyoming	Laramie	F. M. Tisdel, Ph. D.

* Acting president.

AGRICULTURAL EXPERIMENT STATIONS OF THE UNITED STATES, THEIR LOCATIONS, DIRECTORS, AND PRINCIPAL LINES OF WORK.

Station, Location and Director	Principal Lines of Work
Alabama (College), Auburn: J. F. Duggar	Chemistry; botany; soils; analysis of fertilizers and food materials; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; dairying.
Alabama (Canebrake), Uniontown: J. F. Richeson*	Agronomy; horticulture; floriculture; diseases of plants and animals.
Alabama (Tuskegee), Tuskegee Institute: G. W. Carver	Agronomy; horticulture; diseases of plants; animal industry; dairying.
Arizona, Tucson: R. H. Forbes	Chemistry; botany; agronomy; horticulture; plant breeding; animal husbandry; dairying; irrigation.
Arkansas, Fayetteville: W. G. Vincenheller	Chemistry; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; dairying; entomology.
California, Berkeley: E. W. Hilgard	Chemistry; soils; bacteriology; fertilizer control; agronomy; horticulture, including viticulture and zymology; botany meteorology; entomology; animal husbandry; dairying; poultry experiments; irrigation and drainage; silviculture; reclamation of alkali lands; animal and plant pathology; nutrition investigations.
Colorado, Fort Collins: L. G. Carpenter	Chemistry; meteorology; agronomy; horticulture; forestry; plant breeding; diseases of plants; animal husbandry; entomology; irrigation.
Connecticut (State), New Haven: E. H. Jenkins	Chemistry; inspection of fertilizers, foods, feeding stuffs, Babcock test apparatus, and nurseries; diseases of plants; plant breeding; forestry; agronomy; entomology.
Connecticut (Storrs), Storrs: L. A. Clinton	Food and nutrition of man and animals; dairy bacteriology; agronomy; horticulture; poultry culture; dairying.
Delaware, Newark: A. T. Neale	Chemistry; bacteriology; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; dairying; entomology.
Florida, Lake City: P. H. Rolfs	Chemistry; agronomy; horticulture; diseases of plants; feeding experiments; veterinary science; entomology.
Georgia, Experiment: R. J. Redding	Agronomy; horticulture; plant breeding; entomology; animal husbandry; dairying.
Idaho, Moscow: H. T. French	Chemistry; physics; botany; agronomy; horticulture; plant breeding; diseases of plants; entomology; animal husbandry.
Illinois, Urbana: E. Davenvort	Chemistry; bacteriology; agronomy; horticulture; forestry; plant breeding; diseases of plants and animals; animal husbandry; dairying.
Indiana, Lafayette: Arthur Goss	Chemistry; agronomy; horticulture; plant breeding; animal husbandry; dairying; diseases of plants and animals; entomology.

Principal Lines of Work

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*Assistant director.

AGRICULTURAL EXPERIMENT STATIONS—CONTINUED.

Station, Location and Director	Principal Lines of Work
Iowa, Ames: C. F. Curtiss	Chemistry; botany; agronomy; horticulture; plant breeding; forestry; diseases of plants; animal husbandry; dairying; entomology; rural engineering; good roads investigation.
Kansas, Manhattan: J. T. Willard	Chemistry; soils; horticulture; plant breeding; agronomy; animal husbandry; poultry experiments; diseases of animals; dairying; entomology; extermination of prairie dogs and gophers; irrigation.
Kentucky, Lexington: M. A. Scovell	Chemistry; soils; inspection of fertilizers, foods, feeding stuffs, orchards and nurseries; agronomy; horticulture; plant breeding; animal husbandry; dairying; diseases of plants; entomology; apiculture.
Louisiana (Sugar), New Orleans: W. R. Dodson	Chemistry; bacteriology; soils; agronomy; horticulture; sugar making; drainage; irrigation.
Louisiana (State), Baton Rouge: W. R. Dodson	Geology; botany; bacteriology; soils, inspection of fertilizers and Paris green; agronomy; horticulture; animal husbandry; diseases of animals; entomology.
Louisiana (North), Calhoun: W. R. Dodson	Chemistry; soils; fertilizers; agronomy; horticulture; animal husbandry; stock raising; dairying.
Maine, Orono: C. D. Woods	Chemistry; botany; inspection of foods, fertilizers, commercial feeding stuffs, seeds, and creamery glassware; horticulture; plant breeding; diseases of plants and animals; food and nutrition of man and animals; poultry raising, and entomology.
Maryland, College Park: H. J. Patterson	Chemistry; agronomy; horticulture; diseases of plants and animals; breeding of plants; animal husbandry; dairying; entomology.
Massachusetts, Amherst: W. P. Brooks	Chemistry; meteorology; inspection of fertilizers, commercial feeding stuffs, creamery glassware and nurseries; agronomy; horticulture; diseases of plants and animals; animal husbandry; dairying; entomology; effect of electricity on plant growth.
Michigan, Agricultural College: C. D. Smith	Chemistry; analysis and control of fertilizers and feeding stuffs; bacteriology; agronomy; horticulture; plant breeding, diseases of plants and animals; animal husbandry; stable hygiene; entomology.
Minnesota, St. Anthony Park, St. Paul: W. M. Liggett	Chemistry; fertilizers; agronomy; horticulture; forestry; diseases of plants and animals; food and nutrition investigations; animal breeding; animal husbandry; dairying; entomology; farm management; farm statistics.
Mississippi, Agricultural College: W. L. Hutchinson	Soils; fertilizers; agronomy; horticulture; plant breeding; animal husbandry; diseases of animals; poultry culture; dairying; entomology.
Missouri (College), Columbia: H. J. Waters	Chemistry; soil survey; botany; agronomy; horticulture; diseases of plants and animals; animal husbandry; plant breeding; dairying; entomology.
Missouri (Fruit), Mountain Grove: Paul Evans	Horticulture; entomology; inspection of orchards and nurseries.
Montana, Bozeman: F. B. Linfield	Chemistry; meteorology; botany; agronomy; dry farming; horticulture; animal husbandry; poultry experiments; dairying; entomology; irrigation.

AGRICULTURAL EXPERIMENT STATIONS—CONTINUED.

Station, Location and Director	Principal Lines of Work
Nebraska, Lincoln: E. A. Burnett	Chemistry; botany; meteorology; soils; agronomy; horticulture; plant breeding; diseases of plants and animals; forestry; animal husbandry; dairying; entomology; irrigation; extermination of prairie dogs.
Nevada, Reno: J. E. Stubbs	Chemistry; botany; soils; agronomy; horticulture; forestry; animal diseases; animal husbandry; entomology; irrigation.
New Hampshire, Durham: W. D. Gibbs	Chemistry; agronomy; horticulture; plant breeding; forestry; animal husbandry; dairying; entomology.
New Jersey (State), New Brunswick: E. B. Voorhees New Jersey (College), New Brunswick: E. B. Voorhees.	Chemistry; oyster culture; botany; analysis of fertilizers, foods, and commercial feeding stuffs; agronomy; horticulture; plant breeding; diseases of plants and animals; dairy husbandry; entomology; soil bacteriology; irrigation.
New Mexico, Mesilla Park: Luther Foster	Chemistry; botany; agronomy; horticulture; animal husbandry; entomology; irrigation.
New York (State), Geneva: W. H. Jordan	Chemistry; bacteriology; meteorology; inspection of creamery glassware, feeding stuffs, fertilizers, and Paris green; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; poultry experiments; dairying; entomology; irrigation.
New York (Cornell), Ithaca: L. H. Bailey	Chemistry; fertilizers; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; poultry experiments; dairying; entomology.
North Carolina, Raleigh: B. W. Kilgore	Chemistry; soils; agronomy; horticulture; animal husbandry; diseases of animals and plants; poultry experiments; dairying; tests of farm machinery.
North Dakota Agricultural College: J. H. Worst	Chemistry; botany; agronomy; plant breeding; horticulture; forestry; diseases of plants and animals; food analysis; animal husbandry; dairying; farm mechanics.
Ohio, Wooster: C. E. Thorne	Agronomy; horticulture; plant breeding; forestry; diseases of plants; animal husbandry; entomology.
Oklahoma, Stillwater: John Fields	Chemistry; agronomy; horticulture; plant breeding; forestry; botany; bacteriology; diseases of plants and animals; animal husbandry; entomology.
Oregon, Corvallis: J. Withycombe	Chemistry; bacteriology; agronomy; horticulture; plant selection; diseases of plants; animal husbandry; poultry experiments: dairying; entomology; irrigation.
Pennsylvania State College: H. P. Armsby	Chemistry; meteorology; horticulture; agronomy; animal husbandry; dairying.
Rhode Island, Kingston: H. J. Wheeler	Chemistry; meteorology; soils; inspection of fertilizers and feeding stuffs; agronomy; horticulture; plant breeding; poultry experiments.
South Carolina, Clemson College: J. N. Harper	Chemistry; inspection of fertilizers; botany; agronomy ;horticulture; plant breeding; diseases of plants; animal husbandry; dairying; veterinary science; entomology.
South Dakota, Brookings: J. W. Wilson	Chemistry; botany; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; entomology.

AGRICULTURAL EXPERIMENT STATIONS—CONTINUED.

Station, Location and Director	Principal Lines of Work
Tennessee, Knoxville: H. A. Morgan	Chemistry; inspection of fertilizers; agronomy; horticulture; diseases of plants; animal weeds; diseases of plants; animal husbandry; dairying; entomology.
Texas, College Station: J. A. Craig	Chemistry; soils; agronomy; horticulture; animal husbandry; diseases of animals; irrigation; seed testing; feed inspection.
Utah, Logan: P. A. Yoder	Chemistry; alkali soil investigations; agronomy; hortculture; diseases of plants; animal husbandry; dairying; poultry experiments; entomology; irrigation; arid farming.
Vermont, Burlington: J. L. Hills	Chemistry; botany; bacteriology; inspection of fertilizers, feeding stuffs and creamery glassware; agronomy; horticulture; diseases of plants; animal husbandry; dairying.
Virginia, Blacksburg: A. M. Soule	Chemistry; geology; biology; agronomy; horticulture; plant breeding; bacteriology; analysis of foods and soils; inspection of orchards; animal husbandry; veterinary science; dairying; entomology; cider and vinegar making; ferments.
Washington, Pullman: E. A. Bryan	Chemistry; botany; bacteriology; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; veterinary science; dairying; entomology; irrigation.
West Virginia, Morgantown: J. H. Stewart	Chemistry; inspection of fertilizers, orchards, and nurseries; agronomy; horticulture; diseases of plants; animal husbandry; poultry experiments; entomology.
Wisconsin, Madison: W. A. Henry	Chemistry; bacteriology; soils; agronomy; horticulture; plant breeding; animal husbandry; dairying; irrigation, drainage and agricultural engineering.
Wyoming, Laramie: B. C. Buffum	Botany; meteorology; soils; range improvement; fertilizers; agronomy; plant selection; food analysis; animal husbandry; irrigation.

ASSOCIATION OF AMERICAN AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

President, J. L. Snyder, president of Michigan State Agricultural College, East Lansing, Mich.; secretary-treasurer, J. L. Hills, director of Vermont Experiment Station, Burlington, Vt.

OFFICIALS IN CHARGE OF FARMERS' INSTITUTES.

Farmers' Institute Specialist, Department of Agriculture.

John Hamilton, Washington, District of Columbia.

State Superintendents.

State or Territory	Name of Official	Postoffice
Alabama	C. A. Cary, Alabama Polytechnic Institute	Auburn.
	G. W. Carver, Director Agricultural Experiment Station	Tuskegee Institute.
Alaska	C. C. Georgeson, Agricultural Experiment Station	Sitka.
Arizona	R. H. Forbes, Director Agricultural Experiment Station	Tucson.
Arkansas	J. M. Tilman, President University of Arkansas	Fayetteville.
California	E. J. Wickson, University of California	Berkeley.
Colorado	W. L. Carlyle, State Agricultural College	Fort Collins.
Connecticut	J. F. Brown, Secretary State Board of Agriculture	N. Stonington.
	J. G. Schwink, Secretary Connecticut Dairymen's Association	Hartford.
	H. C. C. Miles, Secretary Connecticut Pomological Society	Milford.
Delaware	Wesley Web, Director of Farmers' Institutes	Dover.
	A. T. Neale, Director Agricultural Experiment Station	Newark.
Florida	C. M. Conner, University of Florida	Lake City.
Georgia	H. C. White, President State College of Agriculture	Athens.
	Harvie Jordan, Director of Farmers' Institutes	Atlanta.
Hawaii	J. G. Smith, Agricultural Experiment Station	Honolulu.
Idaho	H. T. French, Director Agricultural Experiment Station	Moscow.
Illinois	Frank H. Hall, Secretary Farmers' Institutes	Springfield.
Indiana	W. C. Latta, Purdue University	Lafayette.
Iowa	J. C. Simpson, Secretary State Board of Agriculture	Des Moines.
Kansas	J. H. Miller, Superintendent of Farmers' Institutes	Manhattan
Kentucky	Hubert Vreeland, Commissioner of Agriculture	Frankfort.
Louisiana	Charles Schuler, Commissioner of Agriculture	Baton Rouge.
Maine	A. W. Gilman, Commissioner of Agriculture	Augusta.
Maryland	W. L. Amoss, Director of Farmers' Institutes	Benson.
Massachusetts	J. L. Ellsworth, Secretary State Board of Agriculture	Boston.
Michigan	L. R. Taft, Superintendent of Farmers' Institutes	Agricultural College.

OFFICIALS IN CHARGE OF FARMERS' INSTITUTES—CONTINUED.

State or Territory	Name of Official	Postoffice
Minnesota	O. C. Gregg, Director of Farmers' Institutes	Lynd.
Mississippi	J. C. Hardy, President Agricultural and Mechanical College	Agricultural College.
Missouri	George B. Ellis, Secretary State Board of Agriculture	Columbia.
Montana	F. B. Linfield, Director Agricultural Experiment Station	Bozeman.
Nebraska	E. A. Burnett, Director Agricultural Experiment Station	Lincoln.
Nevada	J. E. Stubbs, President Nevada State University	Reno.
New Hampshire	N. J. Bachelder, Secretary State Board of Agriculture	Concord.
New Jersey	Franklin Dye, Secretary State Board of Agriculture	Trenton.
New Mexico	Luther Foster, President Agricultural and Mechanical College	Agricultural College.
New York	F. E. Dawley, Director of Farmers' Institutes	Fayetteville.
North Carolina	S. L. Patterson, Commissioner of Agriculture	Raleigh.
North Dakota	E. E. Kaufman, Director of Farmers' Institutes	Bismarck.
Ohio	T. L. Calvert, Secretary State Board of Agriculture	Columbus.
Oklahoma	C. A. McNabb, Secretary Board of Agriculture	Guthrie.
Oregon	J. Withycombe, Director Agricultural Experiment Station	Corvallis.
Pennsylvania	A. L. Martin, Deputy Secretary of Agriculture	Harrisburg.
Porto Rico	D. W. May, Agricultural Experiment Station	San Juan.
Rhode Island	John G. Clarke, Secretary State Board of Agriculture	Providence.
South Carolina	J. N. Harper, Director Agricultural Experiment Station	Clemson College.
South Dakota	M. F. Greeley, Superintendent of Farmers' Institutes	Gary.
Tennessee	W. W. Ogilvie, Commissioner of Agriculture	Nashville.
Texas	J. W. Carson, Director of Farmers' Institutes	College Station.
Utah	P. A. Yoder, Director Agricultural Experiment Station	Logan.
Vermont	Geo. Aitken, Secretary State Board of Agriculture	Woodstock.
Virginia	G. W. Koiner, Commissioner of Agriculture	Richmond.
	A. M. Soule, Director Agricultural Experiment Station	Blacksburg.
Washington	E. A. Bryan, President Agricultural College	Pullman.
	E. E. Elliott, Agricultural College	Pullman.
West Virginia	H. E. Williams, Assistant Secretary of Agriculture	Sunlight.
Wisconsin	G. McKerrow, Director of Farmers' Institutes	Madison.
Wyoming	B. C. Buffum, Director Agricultural Experiment Station	Laramie.

AMERICAN ASSOCIATION OF FARMERS' INSTITUTE WORKERS.

Prsident, Tait Butler, State Veterinarian, Raliegh, N. C.; secretary-treasurer, John Hamilton, Farmers' Institute Specialist, United States Department of Agriculture, Washington, D. C.

STATE OFFICIALS IN CHARGE OF AGRICULTURE.*

Commissioners of Agriculture.

State or Territory	Name of Official	Postoffice
Alabama	R. R. Poole	Montgomery.
Arkansas	H. T. Bradford	Little Rock.
Florida	B. E. McLin	Tallahassee.
Georgia	O. B. Stevens	Atlanta.
Idaho	Allen Miller, Commissioner of Immigration, etc	Boise.
Kentucky	Hubert Vreeland	Frankfort.
Louisiana	Charles Schuler	Baton Rouge.
Maine	A. W. Gilman	Augusta.
Montana	J. A. Ferguson	Helena.
New York	Chas. A. Wieting	Albany.
North Carolina	S. L. Patterson	Raleigh.
North Dakota	W. C. Gilbreath	Bismarck.
New Mexico	J. W. Raynolds, Secretary of State	Santa Fe.
Pennsylvania	N. B. Critchfield, Secretary of Agriculture	Harrisburg.
Philippine Islands	W. C. Welborn, Chief Bureau of Agriculture	Manila.
Porto Rico	Wm. H. Elliott, Commissioner of the Interior	San Juan.
South Carolina	E. J. Watson	Columbia.
Tennessee	W. W. Ogilvie	Nashville.
Texas	W. J. Clay	Austin.
Virginia	Geo. W. Koiner	Richmond.
Washington	A. W. Frater, Deputy Secretary of State	Olympia.

STATE OFFICIALS IN CHARGE OF AGRICULTURE—CONTINUED.

Secretaries of State Boards of Agriculture.

State or Territory	Name of Official	Postoffice
California	Albert Lindley	Sacramento.
Colorado	A. M. Hawley	Fort Collins.
Connecticut	J. F. Brown	North Stonington.
Delaware	Wesley Webb	Dover.
Hawaii	C. S. Holloway	Honolulu.
Illinois	W. C. Garrard	Springfield.
Indiana	Chas. Downing	Indianapolis.
Iowa	J. C. Simpson	Des Moines.
Kansas	F. D. Coburn	Topeka.
Maryland	Wm. T. P. Turpin, Superintendent of Immigration	Centerville.
Massachusetts	J. L. Ellsworth	Boston.
Michigan	Addison M. Brown	Agricultural College.
Minnesota	E. W. Randall, Secretary State Agricultural Society	St. Paul.
Missouri	George B. Ellis	Columbia.
Nebraska	Robt. W. Furnas	Brownville.
Nevada	Louis Bevier	Carson City.
New Hampshire	N. J. Bachelder	Concord.
New Jersey	Franklin Dye	Trenton.
North Carolina	T. K. Bruner	Raleigh.
Ohio	T. L. Calvert	Columbus.
Oklahoma	C. A. McNabb	Guthrie.
Oregon	M. D. Wisdom	Portland.
Rhode Island	John G. Clarke	Providence.
South Dakota	Walter B. Dean	Yankton.
Vermont	George Aitken	Woodstock.
West Virginia	J. B. Garvin	Charleston.
Wisconsin	John M. True	Madison.
Wyoming	C. T. Johnston, State Engineer	Cheyenne.

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* Officials of territories and island dependencies are included. So far as learned, Arizona, Mississippi, New Mexico and Utah have no state official charged with agricultural interests, but letters addressed to the secretary of state would probably receive attention.

APPROPRIATIONS FOR THE UNITED STATES DEPARTMENT OF AGRICULTURE FOR THE FISCAL YEARS ENDING JUNE 30, 1906, 1907 and 1908.

Object of appropriation.	1906	1907	1908
Salaries, Statutory[a]	$814,970.00	$785,850.00	$833,490.00
Library	8,040.00	10,000.00	12,500.00
Contingent Expenses	37,000.00	37,000.00	47,000.00
Collecting Agricultural Statistics	98,800.00	[b]112,900.00	[b]122,900.00
Plant Industry Bureau	------------	502,301.28	586,559.40
Botanical Investigations and Experiments	63,840.00	(c)	(c)
Pomological Investigations	35,640.00	(c)	(c)
Grass and Forage Plant Investigations	39,660.00	(c)	(c)
Sugar Investigations	7,500.00	(c)	(c)
Tea Culture Investigations	8,500.00	(c)	(c)
Experimental Gardens and Grounds	20,320.00	(c)	(c)
Purchase and Distribution of Valuable Seeds	242,920.00	242,920.00	288,000.00
Vegetable Pathological Investigations	155,640.00	(c)	------------
Grain Investigations, 1906	25,000.00	15,000.00	------------
Chemistry Bureau, Laboratory	130,920.00	[d]395,920.00	650,000.00
Forestry Investigations	793,180.00	902,210.82	1,917,507.26
National Forests, Administration, etc	------------	1,052,500.00	1,666,709.15
Wichita Forest and Game Preserve	------------	15,000.00	------------
Survey and Report, Appalachian and White Mountain Watersheds, 1907 and 1908	------------	25,000.00	[e]23,403.76
Soil Investigations	170,000.00	185,000.00	170,000.00
Entomology Bureau	68,000.00	307,500.00	255,207.27
Biological Survey Bureau	44,420.00	44,420.00	44,420.00
Agricultural Experiment Stations [for stations under Hatch and Adams acts: $794,660, 1906; $1,056,000, 1907; $1,152,000, 1908]	74,660.00	84,045.05	107,065.15
Nutrition Investigations	20,000.00	20,000.00	5,000.00
Irrigation Investigations	74,500.00	122,200.00	150,000.00
Public Road Inquiries	37,660.00	57,660.00	57,660.00
Cotton Boll Weevil Investigations	190,000.00	230,000.00	185,632.42
Publications, Department of Agriculture	132,250.00	132,250.00	[f]468,750.00
Animal Industry Bureau	1,456,520.00	[g]3,946,980.00	3,947,200.00
Eradicating Cattle Ticks, 1907 and 1908	------------	107,500.00	135,811.90
Animal Industry Bureau (deficiency act)	63,000.00	------------	------------
Building, Department of Agriculture	950,000.00	780,934.68	495,340.07
Total	$5,719,700.00	------------	------------
WEATHER BUREAU.			
Salaries	$191,340.00	$194,690.00	$196,990.00
Fuel, Lights and Repairs	10,000.00	10,000.00	10,000.00
Contingent Expenses	10,000.00	10,000.00	10,000.00
General Expenses	1,093,565.00	630,000.00	645,000.00
Buildings	53,000.00	53,000.00	------------
Cables and Land Lines	35,000.00	------------	------------
Salaries, Station Employes	------------	541,550.00	551,000.00
Total Weather Bureau	$1,392,990.00	------------	------------
Grand Total	$7,112,690.00	------------	------------

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[a] Statutory Salaries of Weather Bureau and Forest Service not included.
[b] Includes $4,900 for Foreign Markets Investigations.
[c] Included under Bureau of Plant Industry.
[d] Includes $250,000 for enforcement of Food and Drugs Act.
[e] Unexpended balance from 1907.
[f] Includes Yearbook and general printing funds.
[g] Includes $3,000,000 for meat inspection.

NATIONAL DAIRY ASSOCIATIONS.

Name of Organization	Secretary	Postoffice
International Federation of Dairying	L. Gedoelst Ed. H. Webster, chairman American committee.	31 rue Jordan, 31 Bruxelles, Belgium. U. S. Department of Agriculture, Washington, D. C.
International Association of Milk Dealers	C. J. Staples	336 Ellicott street, Buffalo, N. Y.
Association of State and National Food and Dairy Departments.	R. M. Allen	Lexington, Ky.
Association of Inspectors and Instructors of the National and State and Dairy Food Departments	B. D. White	U. S. Department of Agriculture, Washington, D. C.
National Association of Dairy Instructors and Investigators	C. B. Lane	U. S. Department of Agriculture, Washington, D. C.
National Dairy Union	Chas. Y. Knight	154 Lake street, Chicago, Ill.
National Dairy Show Association	E. Sudendorf	154 Washington street, Chicago, Ill.
National Creamery Buttermakers' Association	E. Sudendorf	154 Washington street, Chicago, Ill.

AMERICAN NATIONAL LIVE STOCK ASSOCIATION.

President, H. A. Jastro, Bakersfield, Cal.; Secretary, W. M. Tomlinson.

AMERICAN ASSOCIATION OF LIVE STOCK HERD BOOK SECRETARIES.

President, C. R. Thomas, Independence, Mo.; Secretary, Charles F. Mills, Springfield, Ill.

NATIONAL WOOL GROWERS' ASSOCIATION.

President, F. R. Gooding, Boise, Idaho; Secretary, George S. Walker, Cheyenne, Wyo.

THE CORN-BELT MEAT PRODUCERS' ASSOCIATION.

President, A. L. Ames, Buckingham, Iowa; Secretary, H. C. Wallace, Des Moines, Iowa.

PROTECTION AGAINST CONTAGION FROM FOREIGN CATTLE.

An act of congress of August 28, 1894, prohibits the importation of cattle and cattle hides, but by the act of March 2, 1895, making appropriations for the Department of Agriculture, it is provided that the prohibition may be suspended by the President whenever the secretary of agriculture shall certify to the President what countries or parts of countries are free from contagious or infectious diseases of domestic animals. The President, by proclamation of November 8, 1895, lifted the embargo with reference to Norway, Sweden, Holland, Great Britain, Ireland, the Channel Islands, and the countries of North, Central, and South America so as to admit cattle under sanitary regulations prescribed by the secretary of agriculture also from all countries so as to admit hides under regulations prescribed by the secretary of the treasury.

OFFICIAL INSPECTORS OF FERTILIZERS IN THE UNITED STATES.

State	Official Title	Postoffice
Alabama	Commissioner of agriculture	Montgomery.
Arkansas	Commissioner of mines, manufacture, and agriculture	Little Rock.
California	Director, agricultural experiment station	Berkeley.
Connecticut	Director, agricultural experiment station	New Haven.
Delaware	State chemist, agricultural experiment station	Newark.
Florida	Commissioner of agriculture	Tallahassee.
Georgia	Commissioner of agriculture	Atlanta.
Illinois	Secretary, State board of agriculture	Springfield.
Indiana	State chemist, Purdue University	Lafayette.
Kansas	Director, agricultural experiment station	Manhattan.
Kentucky	Director, agricultural experiment station	Lexington.
Louisiana	Commissioner of agriculture and immigration	Baton Rouge.
Maine	Director, agricultural experiment station	Orono.
Maryland	State chemist, Maryland Agricultural College	College Park.
Massachusetts	Director, agricultural experiment station	Amherst.
Michigan	Secretary, State board of agriculture	East Lansing.
Mississippi	State chemist	Agricultural College
Missouri	Director, agricultural experiment station	Columbia.
New Hampshire	Secretary, State board of agriculture	Concord.
New Jersey	Director, agricultural experiment stations	New Brunswick.
New York	Commissioner of agriculture	Albany.
North Carolina	Commissioner of agriculture	Raleigh.
North Dakota	Director, agricultural experiment station	Fargo.
Ohio	Secretary, State board of agriculture	Columbus.
Oklahoma	Secretary, State board of agriculture	Guthrie
Pennsylvania	Secretary of agriculture	Harrisburg.
Porto Rico	Commissioner of the interior	San Juan.
Rhode Island	Chemist, agricultural experiment station	Kingston.
South Carolina	Secretary, board of control	Clemson College.
Tennessee	Commissioner of agriculture	Nashville.
Texas	State chemist	College Station.
Vermont	Director, agricultural experiment station	Burlington.
Virginia	Commissioner of agriculture	Richmond.
Washington	State chemist, State College	Pullman.
West Virginia	Director, agricultural experiment station	Morgantown.
Wisconsin	Director, agricultural experiment station	Madison.

STOCK BREEDERS' ASSOCIATIONS. *a*

Names and Addresses of Stock Association Secretaries, With Breeds and Numbers of Registered Live Stock in United States, June 30, 1907.

CATTLE.

Breed	Secretary	Post-office	Number Registered		Number Living	
			Males	Females	Males	Females
Aberdeen-Angus	Chas. Gray	Union Stock Yards, Chicago	36,372	59,029	31,757	40,419
Ayrshire	C. M. Winslow	Brandon, Vt.	10,310	22,095	1,286	7,020
Devon	L. P. Sisson	Newark, Ohio	8,281	14,094	4,000	10,000
Dutch-Belted	H. P. Richards	Easton, Pa	649	1,385	175	500
Galloway	R. W. Brown	Union Stock Yards, Chicago, Ill.	17,946	12,754	7,000	10,100
Guernsey	Wm.H. Caldwell	Peterboro, N. H.	12,174	22,678	8,000	14,000
Hereford	C. R. Thomas	225 W. 12th St., Kansas City, Mo.	133,021	135,862	(*b*)115,000	
Holstein-Friesian	F. L. Houghton	Brattleboro, Vt.	50,871	104,846	(*c*)	(*c*)
Jersey	J.J. Hemingway	8 W. 17th St., New York City	76,817	207,453	(*c*)	(*c*)
Polled-Durham	J. H. Martz	Greenville, Ohio	6,615	7,957	4,505	5,631
Red Polled	H. A. Martin	Gotham, Wis.	16,366	27,148	6,500	13,500
Short-horn	John W. Groves	Union Stock Yards, Chicago, Ill.	282,000	432,903	93,000	186,000
Sussex	Overton Lea	Nashville, Tenn	85	188	68	108
Swiss, Brown	C. D. Nixon	Owego, N. Y.	2,424	3,572	(*c*)	(*c*)

(*a*) Under the provisions of paragraph 473 of the act of July 24, 1897, amended March 3, 1903, any animal imported specially for breeding purposes shall be admitted free provided that no such animal shall be admitted free unless pure bred, of a recognized breed, and duly registered in the book of record established for that breed. The Secretary of the Treasury, upon the advice of the Secretary of Agriculture, issued, April 24, 1903, regulations for the importation of animals under this law, and designated the recognized breeds and the books of record established for these breeds.

(*b*) Total of males and females.

(*c*) No data.

STOCK BREEDERS' ASSOCIATIONS—CONTINUED

HORSES.

Breed	Secretary	Post-office	Number Registered		Number Living	
			Males	Females	Males	Females
Cleveland Bay	R. P. Stericker	80 Chestnut Ave., West Orange, N.J.	1,252	520	1,200	450
Clydesdale	R. B. Ogilvie	Union Stock Yards, Chicago, Ill.	(a) 13,236		(b)	(b)
Coach, French	Chas. C. Glenn	Columbus, Ohio	276	6	268	6
Coach, French	D. E. Willet	Maple Ave. and Harrison St., Oak Park, Ill.	....	....	1,500	500
Coach, German	J. Crouch	Lafayette, Ind.	2,149	290	1,900	250
Coach, German (Oldenburg)	C. E. Stubbs	Fairfield, Iowa	275	23	240	25
Draft, Belgian	J. D. Connor, jr.	Wabash, Ind.	2,740	395	2,800	425
Draft, French	C. E. Stubbs	Fairfield, Iowa	10,071	5,942	6,000	5,500
Hackney	Gurney C. Gue	Tichenor Grand Bldg., 61 and Broadway, New York City	....	....	622	1,176
Morgan	T. E. Boyce	Middlebury, Vt.	....	....	2,000	2,000
Percheron	G. W. Stubblefield	Union Stock Yards, Chicago, Ill.	5,022	4,614	21,500	14,000
Percheron	Chas. C. Glenn	Columbus, Ohio	1,787	413	1,762	393
Percheron	John A. Forney	Plainfield, Ohio	....	....	21,000	13,000
Saddle Horse	I. B. Nall	Louisville, Ky.	2,890	4,126	2,166	3,096
Shetland Pony	Mortimer Levering	Lafayette, Ind.	2,500	3,800	3,000	3,500
Shire	Chas. Burgess	Wenona, Ill.	6,652	2,482	2,375	625
Suffolk	Alex. Galbraith	Janesville, Wis.	194	128	120	100
Thoroughbred	W. H. Rowe	571 5th Ave., New York City	(a) 49,706		(b)	(b)
Trotter, American	W. H. Knight	355 Dearborn St., Chicago, Ill.	46,170	159,845	25,000	50,000
Jacks and Jennets	J. W. Jones	Columbus, Tenn.	1,436	900	(b)	(b)

(a) Total of males and females.

(b) No data.

STOCK BREEDERS' ASSOCIATIONS—CONTINUED.

SHEEP.

Breed	Secretary	Post-office	Number Registered		Number Living	
			Males	Females	Males	Females
Cheviot	F. E. Dawley	Fayetteville, N. Y.	(a) 11,410		625	3,150
Cotswold	F. W. Harding	Waukesha, Wis.	(a) 43,790		(a) 16,000	
Dorset Horn	J. E. Wing	Mechanicsburg, Ohio	1,815	4,711	1,200	3,000
Hampshire Down	Comfort A. Tyler	Nottawa, Mich.	6,540	14,694	2,500	8,000
Leicester	A. J. Temple	Cameron, Ill.	4,068	6,344	3,417	5,328
Lincoln	Bert Smith	Charlotte, Mich.	6,660	9,550	4,800	6,800
Merino (Delaine)	B. M. McDowell	Canton, Ohio	(a) 10,494		(a) 18,000	
Merino (Delaine)	J. B. Johnson	248 W. Pike St., Canonsburg, Pa.	6,973	11,893	500	2,000
Merino (French)	Dwight Lincoln	Milford Center, Ohio	(a) 41,975		15,000	25,000
Merino (German)	E. N. Ball	Ann Arbor, Mich.	197	256	158	194
Merino (Spanish)	E. N. Ball	Ann Arbor, Mich.	12,575	37,775	1,000	5,000
Merino (Spanish)	J. H. Earll	Skaneateles, N. Y.	7,960	11,957	90	630
Merino (Spanish)	Wesley Bishop	R. F. D. No. 1, Delaware, Ohio	17,496	34,715	3,200	7,986
Merino (Spanish)	J. P. Ray	R. F. D. No. 3, East Bloomfield, N. Y.	1,275	1,500	60	240
Merino (Spanish)	C. A. Chapman	Middlebury, Vt.	(a) 218,265		(b)	(b)
Oxford Down	W. A. Shafor	Hamilton, Ohio	(a) 38,353		(b)	(b)
Shropshire	Mortimer Levering	Lafayette, Ind.	112,000	154,000	50,000	90,000
Southdown	F. S. Springer	Springfield, Ill.	(a) 21,742		(a) 10,000	
Suffolk	G. W. Franklin	Des Moines, Iowa	(a) 1,143		300	330

(a) Total number of males and females.
(b) No data.

HOGS.

Berkshire	F. S. Springer	Springfield, Ill.	(a) 102,040		(a) 50,000	
Cheshire	Ed. S. Hill	Freeville, N. Y.	1,291	2,728	300	1,000
Chester (Ohio Improved)	J. C. Hiles	Cleveland, Ohio	(a) 18,203		7,500	22,500
Duroc Jersey	T. B. Pearson	Thorntown, Ind.	10,183	23,530	9,000	18,430
Duroc Jersey	H. C. Sheldon	Peoria, Ill.	32,010	77,500	25,000	75,000
Hampshire (Thin Rind)	E. C. Stone	Armstrong, Ill.	645	1,783	440	1,690
Poland China	W. M. McFadden	Union Stock Yards, Chicago, Ill.	63,269	156,955	40,000	16,000
Poland China	A. M. Brown	Drawer 16, Winchester, Ind.	35,000	78,000	35,000	65,000
Poland China	Geo. F. Woodworth	Maryville, Mo.	45,675	110,060	3,000	12,000
Poland China	H. P. Wilson	Gadsden, Tenn.	897	1,316	400	700
Tamworth	E. N. Ball	Ann Arbor, Mich.	(a) 3,150		500	2,500
Yorkshire	Harry G. Krum	White Bear Lake, Minn.	(a) 6,500		1,200	3,000

(a) Total of males and females.

FORESTRY ASSOCIATIONS.

American Forestry Association.—President, Hon. James Wilson, Secretary of Agriculture; Secretary, Thomas E. Will, Washington, D. C.; Treasurer, Otto Luebkert, Washington, D. C.

International Society of Arboriculture.—President, Gen. William J. Palmer, Colorado Springs, Colo.; Vice-President, Henry John Elwes, F. R. S., Colesborne, Cheltenham, England; Secretary, J. P. Brown, Connersville, Ind.

Society of American Foresters.—President, Gifford Pinchot, Washington, D. C.; Secretary, W. F. Sherfesee, Washington, D. C.

State Organizations.

Name of organization.	Secretary.	Address.
Arizona Salt River Valley Water Users' Association	Chas. A. Van der Veer	Phoenix, Ariz.
California:		
Water and Forest Association	T. C. Friedlander	45 Mills Bldg., San Francisco.
Forestry Educational Association	E. C. Damon	San Diego.
Sierra Club	William E. Colby	San Francisco.
Forest and Water Society of Southern California	Wm. H. Knight	Los Angeles.
Pacific Coast Forest, Fish, and Game Association	Wm. Greer Harrison	San Francisco.
Cincinnati Forest and Improvement Association	Adolph Leue	127 West Twelfth st.
Connecticut Forestry Association	Miss Mary Winslow	Weatogue.
Colorado Forestry Association	W. G. M. Stone, pres't	Denver.
Georgia Forestry Association	Alfred Akerman	Athens.
Iowa Park and Forestry Association	Wesley Greene	Des Moines.
Maine Forestry Association	E. E. Ring	Augusta.
Massachusetts Forestry Association	Edwin A. Start	4 Joy st., Boston.
Michigan Forestry Association	J. Fred Baker	East Lansing.
Minnesota State Forest Association	E. G. Cheyney	St. Anthony Park.
Nebraska Park and Forestry Association	L. B. Craig	York.
New Hampshire Society for the Protection of New Hampshire Forests	Allen Hollis	Concord.
New York:		
State Fish, Game, and Forest League	John D. Whish	Capitol, Albany.
Forestry, Water Storage, and Manufacturing Association of the State of New York	John C. Durgin	1 Broadway, New York.
Association for the Protection of the Adirondacks	E. H. Hall	Tribune Bldg., New York.
Northern New York Forestry Association	O. B. Tappan, director	Potsdam.
American Forest Preservation Society	George Milroy Bailey	Corfu, N. Y.
North Dakota State Sylvaton Society	Miss Ella J. Mitchell	Penn, N. Dak.
Ohio State Forestry Society	C. W. Waid	Wooster.
Oregon Forestry Association	A. D. Monteith	Portland.
Pennsylvania Forestry Association	F. L. Bitler	1012 Walnut st., Philadelphia, Pa.
Pennsylvania Franklin Forestry Society	W. G. Bowers	Chambersburg.
Vermont Forestry Association	Ernest Hitchkock	Pittsford.
Washington Forestry Association	Edmund S. Meany	Seattle.
West Virginia Forestry Association	A. W. Nolan	Morgantown.
New England Forest, Fish and Game Association	Walter L. Hill	Pierce Building, Boston.
Appalachian Mountain Club	R. B. Lawrence	Tremont Bldg., Boston.

NATIONAL BEE KEEPERS' ASSOCIATION.

President, Geo. Hilton, Fremont, Mich.; Secretary, W. Z. Hutchinson, Flint, Mich.; General Manager and Treasurer, N. E. France, Platteville, Wis.

NATIONAL ASSOCIATION OF ECONOMIC ENTOMOLOGISTS.

President, S. A. Forbes, Urbana, Ill.; Secretary, A. F. Burgess, Bureau of Entomology, United States Department of Agriculture, Washington, D. C.

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS.

President, Harry Snyder, St. Anthony Park, Minn.; Secretary, H. W. Wiley, Chemist, Department of Agriculture, Washington, D. C.

HORTICULTURAL AND KINDRED SOCIETIES.

Name of Organization.	Secretary.	Postoffice
American Apple Growers' Congress	T. C. Wilson	Hannibal, Mo.
American Association of Nurserymen	Geo. C. Seager	Rochester, N. Y.
American Carnation Society	Albert M. Herr	Lancaster, Pa.
American Cranberry Growers' Association	A. J. Rider	Hammonton, N. J.
American Federation of Horticultural Societies	Chas. E. Bassett	Fennville, Mich.
Aemrican Institute, Horticultural Section	Leonard Barron	19 W. 44th st., New York, N. Y.
American Nurserymen's Protective Association	Thos. B. Meehan	Dreshertown, Pa.
American Pomological Society	John Craig	Ithaca, N. Y.
American Retail Nurserymen's Protective Association	Guy A. Bryant	Princeton, Ill.
American Rose Society	Benjamin Hammond	Fishkill on Hudson, N. Y.
Chrysanthemum Society of America	David Fraser	Pittsburg, Pa.
Cider and Cider Vinegar Makers' Association of the Northwest	George Miltenberger	St. Louis, Mo.
Eastern Nurserymen's Association	Wm. Pitkin	Rochester, N. Y.
International Apple Shippers' Association	A. Warren Patch	Boston, Mass.
Mississippi Valley Apple Growers' Association	James Handly	Quincy, Ill.
Missouri Valley Horticultural Society	A. V. Wilson	Muncie, Kans.
National Association of Retail Nurserymen	F. E. Grover	Rochester, N. Y.
National Council of Horticulture	H. C. Irish	Missouri Botanical Garden, St. Louis, Mo.
National League of Commission Merchants of the United States	A. Warren Patch	Boston, Mass.
National Nut Growers' Association	J. F. Wilson	Poulan, Ga.
Northwestern Fruit Growers' Association	C. D. Huffman	La Grande, Oreg.
Nurserymen's Mutual Protective Association	Geo. C. Seager	Rochester, N. Y.
Pacific Coast Association of Nurserymen	C. A. Tonneson	Tacoma, Wash.
Peninsula Horticultural Society	Wesley Webb	Dover, Del.
Society for Horticultural Science	C. P. Close	College Park, Md.
Society of American Florists and Ornamental Horticulturists	P. J. Hauswirth	Chicago, Ill.
Southern Nurserymen's Association	A. I. Smith	Knoxville, Tenn.
Southwestern Nurserymen's Association	J. A. Taylor	Wynnewood, Ind. T.
Western Association of Nurserymen	E. J. Holman	Leavenworth, Kans.
Western Fruit Jobbers' Association	E. B. Branch	Omaha, Nebr.

ORGANIZATIONS FOR PROTECTION OF BIRDS AND GAME.

Name of Organization.	Secretary.	Postoffice
American Ornithologists' Union, Committee on Protection of North American Birds	A. K. Fisher, Chairman	Department of Agriculture, Washington, D. C.
Bird Protective Society of America	Edward C. Pease	28 Stafford Bldg., Buffalo, N. Y.
Boone and Crockett Club	Madison Grant	11Wall st., New York, N. Y.
Forest, Fish, and Game Society of America	Wm. F. Kimber	509 5th ave., New York, N. Y.
League of American Sportsmen	Arthur F. Rice	949 Broadway, New York, N. Y.
Lewis and Clark Club	J. Bissell Speer	345 4th ave., Pittsburg, Pa.
National Association of Game and Fish Wardens	Chas. A. Vogelsang	Merchants' Exchange Bldg., San Francisco, Cal.
National Association of Audubon Societies	Wm. Dutcher, president	141 Broadway, New York, N. Y.
New York Zoological Society	Madison Grant	11 Wall st., New York, N. Y.
North American Fish and Game Protective Association	E. T. D. Chambers	Quebec, Canada.

AMERICAN BREEDERS' ASSOCIATION.

President, James Wilson, Washington, D. C.; vice-president, Chas. W. Ward, Queens, N. Y.; secretary, W. M. Hays, Washington, D. C.; treasurer, N. H. Gentry, Sedalia, Mo.; chairman, animal section, A. P. Grout, Winchester, Ill.; secretary, animal section, C. B. Davenport, Cold Spring Harbor, N. Y.; chairman, plant section, H. J. Webber, Ithaca, N. Y.; secretary, plant section, N. E. Hansen, Brookings, S. Dak.

FARMERS' NATIONAL CONGRESS.

President, B. Cameron, Stagville, N. C.; first vice-president, Joshua Strange, Marion, Ind.; second vice-president, L. B. Strayer, Rock Island, Ill.; treasurer, W. L. Ames, Oregon, Wis.; secretary, George M. Whitaker, Washington, D. C.; First assistant secretary, John H. Kimble, Port Deposit, Md.; second assistant secretary, Ralph M. Searles, Edgar, Neb.; third assistant secretary, O. D. Hill, Kendalia, W. Va.; executive committee, president, secretary, and treasurer, E. W. Wickey, East Chicago, Ind.; Levi Morrison, Greenville, Pa.; A. C. Fuller, Dows, Iowa.

PATRONS OF HUSBANDRY.

Officers of National Grange.—Master, N. J. Bachelder, Concord, N. H.; overseer, T. C. Atkeson, Morgantown, W. Va.; lecturer, G. W. F. Gaunt, Mullica Hill, N. J.; treasurer, Mrs. E. S. McDowell, Rome, N. Y.; secretary, C. M. Freeman, Tippecanoe City, Ohio; executive committee, F. N. Godfrey, Olean, N. Y.; E. B. Norris, Sodus, N. Y.; C. J. Bell, East Hardwick, Vt.; F. A. Derthick, Mantua, Ohio; N. J. Bachelder, ex-officio, Concord, N. H.

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